

**EPA Superfund
Record of Decision:**

**EASTERN DIVERSIFIED METALS
EPA ID: PAD980830533
OU 01
HOMETOWN, PA
03/29/1991**

Text:

HOTSPOT AREAS (DIOXIN AND PCB-CONTAMINATED FLUFF AND
SOIL AREAS CONTAMINATED ABOVE TARGET LEVELS)
SEDIMENTS AND SOILS CONTAMINATED WITH METALS ABOVE
TARGET LEVELS MISCELLANEOUS DEBRIS

- * OU2: GROUND WATER
- * OU3: REMAINDER OF THE SITE, IN PARTICULAR THE REMAINDER OF
THE FLUFF PILE

THIS ROD ADDRESSES THE FIRST AND SECOND OPERABLE UNITS. EPA ANTICIPATED ADDRESSING THE THIRD OPERABLE UNIT LATER THIS YEAR.

THE SELECTED ACTION FOR THE FIRST OPERABLE UNIT IS A FINAL REMEDY WHICH PROVIDES FOR TREATING THE PRINCIPAL THREATS AT THE SITE -- THE DIOXIN AND PCB-CONTAMINATED FLUFF AND SOILS -- THROUGH INCINERATION. THE REMEDY ALSO CALLS FOR TREATING THE INCINERATOR RESIDUALS AND METALS-CONTAMINATED SEDIMENTS AND SOILS, IF NECESSARY, AS DETERMINED BY EP TOXICITY OR OTHER APPROPRIATE TOXICITY TESTING, THROUGH STABILIZATION. THE STABILIZED/UNSTABILIZED MEDIA EITHER BE DISPOSED AT AN OFFSITE LANDFILL OR CONSOLIDATED WITH OTHER MEDIA ONSITE. THE MISCELLANEOUS DEBRIS WILL BE DISPOSED OFFSITE.

THE ACTION SELECTED FOR THE SECOND OPERABLE UNIT IS AN INTERIM REMEDY. THE INTERIM REMEDY WILL ENHANCE SHALLOW GROUND WATER COLLECTION AND TREATMENT WHILE PROVIDING FOR ADDITIONAL STUDIES TO DETERMINE THE PRACTICABILITY OF DEEP GROUND WATER RESTORATION.

THE FINAL RODS WHICH WILL BE ISSUED AT A LATER DATE FOR OPERABLE UNITS 2 AND 3 WILL PRESENT FINAL REMEDIES FOR THE GROUND WATER AND THE REMAINDER OF THE SITE, IN PARTICULAR, THE REMAINDER OF THE FLUFF PILE. THE SELECTED FINAL REMEDY FOR OPERABLE UNIT 1 AND INTERIM REMEDY FOR OPERABLE UNIT 2 INCLUDE THE FOLLOWING MAJOR COMPONENTS;

- * EXCAVATE AND INCINERATE, EITHER ONSITE OR OFFSITE, DIOXIN CONTAMINATED FLUFF EXCEEDING THE TARGET LEVEL. THE TARGET LEVEL FOR DIOXIN WILL BE EITHER 20 UG/KG OR A LEVEL AS DETERMINED BY A RECOGNIZED FATE AND TRANSPORT MODEL, WHICHEVER IS LOWER. THE ESTIMATED VOLUME OF DIOXIN CONTAMINATED FLUFF IS 500 CUBIC YARDS.
- * EXCAVATE AND INCINERATE, EITHER ONSITE OR OFFSITE, PCB CONTAMINATED FLUFF AND SOILS IN EXCESS OF THE TARGET LEVEL. THE TARGET LEVEL FOR PCB CONTAMINATED FLUFF AND SOILS WILL BE EITHER 25 MG/KG OR A LEVEL AS DETERMINED BY A RECOGNIZED FATE AND TRANSPORT MODEL, WHICHEVER IS LOWER. THE ESTIMATED VOLUME OF PCB CONTAMINATED FLUFF AND SOIL IS 5,160 CUBIC YARDS.
- * REMOVE THE LEAD CONTAMINATED SOILS IN THE DRAINAGE DITCHES ABOVE TARGET LEVELS. THE TARGET LEVEL FOR LEAD CONTAMINATED SOILS WILL BE EITHER 1,000 MG/KG OR A LEVEL AS DETERMINED BY A RECOGNIZED FATE AND TRANSPORT MODEL, WHICHEVER IS LOWER. THE ESTIMATED VOLUME OF LEAD CONTAMINATED SOILS IS 480 CUBIC YARDS.
- * REMOVE THE METALS CONTAMINATED SAND/SILT/CLAY SIZE STREAM SEDIMENTS ABOVE TARGET LEVELS. TARGET LEVELS WILL DETERMINED BY A RECOGNIZED FATE AND TRANSPORT MODEL. THE ESTIMATED VOLUME OF METALS CONTAMINATED SEDIMENTS IS 120 CUBIC YARDS.
- * RUN THE EP TOXICITY TEST, OR ANOTHER APPROPRIATE TOXICITY TEST AS DETERMINED DURING RD/RA, ON THE INCINERATOR RESIDUALS AND MISCELLANEOUS DEBRIS. IF SOILS AND SEDIMENTS WILL BE DISPOSED OFFSITE RATHER THAN

CONSOLIDATED WITH THE REMAINDER OF THE FLUFF PILE ONSITE,
THEN ALSO TEST THESE MEDIA.

- * IF INCINERATOR RESIDUALS PASS THE TOXICITY TEST, THEN
EITHER DISPOSE IN AN OFFSITE MUNICIPAL LANDFILL OR
CONSOLIDATE WITH THE REMAINDER OF THE FLUFF PILE ONSITE.
IF THE RESIDUALS FAIL THE TOXICITY TEST, THEN TREAT
THROUGH STABILIZATION TO A LEVEL WHICH REMOVES THE
CHARACTERISTIC BY WHICH THEY FAILED, THEN EITHER DISPOSE
IN AN OFFSITE MUNICIPAL LANDFILL OR CONSOLIDATE WITH THE
REMAINDER OF THE FLUFF PILE ONSITE.
- * IF SOILS AND/OR SEDIMENTS PASS THE TOXICITY TEST, THEN
DISPOSE IN AN OFFSITE MUNICIPAL LANDFILL. IF SOILS AND/OR
SEDIMENTS FAIL THE TOXICITY TEST, THEN TREAT THROUGH
STABILIZATION TO A LEVEL WHICH REMOVES THE CHARACTERISTIC
BY WHICH THEY FAILED AND DISPOSE IN AN OFFSITE MUNICIPAL
LANDFILL.
- * IF THE MISCELLANEOUS DEBRIS PASSES THE TOXICITY TEST, THEN
DISPOSE IN AN OFFSITE MUNICIPAL LANDFILL. IF THE
MISCELLANEOUS DEBRIS FAILS THE TEST, THEN DISPOSE IN A
RCRA LANDFILL UNIT WHICH MEETS THE STATUTORY AND
REGULATORY REQUIREMENTS SET FORTH BELOW.
- * INSTALL A GROUND WATER COLLECTION TRENCH PARALLEL TO THE
EXISTING TRENCH, DOWN TO THE TOP OF BEDROCK, WITH AN
ESTIMATED INFLOW RATE OF 20 GPM. THE DEEPENED TRENCH
WOULD EXTEND THE LENGTH OF THE INTERMITTENT STREAM THAT IS
POTENTIALLY FED BY OVERBURDEN GROUND WATER FLOW.
- * UPGRADE THE WASTE WATER TREATMENT FACILITY AS NECESSARY IN
ORDER TO ACHIEVE PENNSYLVANIA NPDES PERMIT LIMITS FOR
ORGANICS AND PENNSYLVANIA ARARS FOR METALS IN SURFACE
WATERS, AS SET FORTH BELOW.
- * EITHER UPGRADE THE EQUALIZATION LAGOON TO MEET NPDES
AND/OR RCRA TECHNOLOGY REQUIREMENTS, OR CONSTRUCT A NEW
EQUALIZATION LAGOON AS PART OF A NEW COLLECTION AND
TREATMENT SYSTEM WHICH MEET THE AFOREMENTIONED CRITERIA.
THE DEGREE OF UPGRADE AND/OR WHETHER A NEW LAGOON IS
REQUIRED WILL BE DETERMINED DURING RD/RA.
- * STUDY FURTHER THE PRACTICABILITY OF DEEP GROUND WATER
RESTORATION.
- * UPGRADE SURFACE WATER RUNON/RUNOFF CONTROLS.
- * COLLECT AND CONSOLIDATE THE ONSITE SCATTERED FLUFF WITH
THE REMAINDER OF THE FLUFF PILE.
- * UPGRADE THE EXISTING SITE FENCE AND CONTINUE SITE
MAINTENANCE AND MONITORING.

STATUTORY DETERMINATIONS

THE SELECTED FINAL REMEDY FOR OPERABLE UNIT 1 IS PROTECTIVE OF HUMAN
HEALTH AND THE ENVIRONMENT, COMPLIES WITH FEDERAL AND STATE REQUIREMENTS
THAT ARE LEGALLY APPLICABLE OR RELEVANT AND APPROPRIATE TO THE REMEDIAL
ACTION, AND IS COST-EFFECTIVE. THIS REMEDY UTILIZES PERMANENT SOLUTIONS
AND ALTERNATIVE TREATMENT TECHNOLOGIES TO THE MAXIMUM EXTENT
PRACTICABLE, AND IT SATISFIES THE STATUTORY PREFERENCE FOR REMEDIES THAT
EMPLOY TREATMENT THAT REDUCES TOXICITY, MOBILITY, OR VOLUME AS THEIR
PRINCIPAL ELEMENT. BECAUSE THE REMEDY FOR OPERABLE UNIT 1 WILL NOT
RESULT IN HAZARDOUS SUBSTANCES REMAINING ONSITE ABOVE HEALTH-BASED
LEVELS, A 5-YEAR REVIEW UNDER SECTION 121(C) OF CERCLA, 42 USC SECTION
9621(C), WILL NOT APPLY TO THIS ACTION.

THE SELECTED INTERIM REMEDY FOR OPERABLE UNIT 2 IS PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT AND UTILIZES PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE, GIVEN THE LIMITED SCOPE OF THE ACTION. BECAUSE THIS ACTION DOES NOT CONSTITUTE THE FINAL REMEDY FOR THIS OPERABLE UNIT, ISSUES SUCH AS LONG-TERM EFFECTIVENESS AND PERMANENCE AND COMPLIANCE WITH APPLICABLE AND RELEVANT AND APPROPRIATE REQUIREMENTS WILL BE ADDRESSED BY THE FINAL RESPONSE ACTION. SUBSEQUENT ACTIONS ARE PLANNED TO ADDRESS FULLY THE THREATS POSED BY THE CONDITIONS AT THIS OPERABLE UNIT.

EDWIN B. ERICKSON
REGIONAL ADMINISTRATOR
REGION III

DATE: 03/29/91

SITE NAME, LOCATION, AND DESCRIPTION

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I. SITE NAME, LOCATION, AND DESCRIPTION

THE EASTERN DIVERSIFIED METALS SITE (SITE) IS A FORMER METALS RECLAMATION FACILITY LOCATED IN RUSH TOWNSHIP, SCHUYLKILL COUNTY, PENNSYLVANIA (FIGURE 1). THE SITE IS LOCATED APPROXIMATELY ONE MILE NORTHWEST OF THE INTERSECTION OF ROUTES 54 AND 309 IN THE TOWN OF HOMETOWN, SCHUYLKILL COUNTY, 1000 FEET WEST OF LINCOLN AVENUE.

THE SITE COVERS APPROXIMATELY 25 ACRES OF PARTIALLY FORESTED LAND, IN A DEEP EAST TO WEST TRENDING TOPOGRAPHIC VALLEY. EAST-WEST ORIENTED RAILROAD TRACKS BORDER THE SITE ON THE NORTH VALLEY RIDGE. THE LITTLE SCHUYLKILL RIVER FLOWS IN A SOUTH-SOUTHEASTERLY DIRECTION 250 FEET WEST OF THE PROPERTY. A SHALLOW STREAM FLOWS WESTERLY ALONG THE SOUTHERN BORDER OF THE SITE IN THE VALLEY BOTTOM, DISCHARGING INTO THE LITTLE SCHUYLKILL RIVER.

THE SITE'S MOST DISTINCTIVE FEATURE IS A PILE OF "PLASTIC FLUFF" WHICH OCCUPIES APPROXIMATELY 7.5 ACRES IN A CENTRAL LOCATION ON THE PROPERTY (FIGURE 2). THE FLUFF IS COMPOSED PRIMARILY OF POLYVINYL CHLORIDE (PVC) AND POLYETHYLENE INSULATION CHIPS, WITH SOME FIBROUS MATERIAL, PAPER, SOIL, AND METAL. THE FLUFF IS RESIDUAL MATERIAL FROM THE RECYCLING OF COPPER AND ALUMINUM COMMUNICATION AND POWER WIRE AND CABLE. AN ESTIMATED 100 MILLION POUNDS OF FLUFF ARE ONSITE IN A PILE APPROXIMATELY 250 FEET WIDE BY 1,500 FEET LONG BY 40-60 FEET HIGH.

#SHEA

II. SITE HISTORY AND ENFORCEMENT ACTIVITIES

PRIOR TO 1966, THE SITE PROPERTY WAS OWNED BY A MANUFACTURING COMPANY ENGAGED IN THE EXTRUSION OF ALUMINUM FOR THE MANUFACTURE OF HOSPITAL FURNITURE. PRE-1966 ACTIVITIES WERE CONFINED TO A SINGLE BUILDING ON THE PROPERTY, WITH THE REMAINDER OF THE SITE LEFT VACANT. THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL RESOURCES (PADER) REPORTED THAT THE COMPANY HAD DISPOSED OF WOODEN WIRE REELS, WOODEN PALLETS, AND SIMILAR DEBRIS AND TRASH ONSITE.

EASTERN DIVERSIFIED METALS (EDM) OPERATED AT THE PRESENT SITE, RECLAIMING COPPER AND ALUMINUM FROM WIRE AND CABLE IN A PROCESSING BUILDING ON LINCOLN AVENUE, FROM 1966 UNTIL 1977. THE PLANT RECEIVED WIRE FROM NUMEROUS SUPPLIERS, INCLUDING AT&T NASSAU METALS CORPORATION. PLASTIC INSULATION SURROUNDING METAL CABLE AND WIRE WAS MECHANICALLY STRIPPED, AND SEPARATED FROM THE METAL USING MECHANICAL (AIR, WATER) GRAVITATIONAL SEPARATION TECHNIQUES. THIS PROCESS ENTAILED CHOPPING THE WIRES, STRIPPING THE PLASTIC COATING FROM THE COPPER WIRE WITH STEEL BLADES, AND SEPARATING THE WIRE FROM THE PLASTIC COVERINGS THROUGH THE USE OF AN AIR CLARIFIER AND A WATER TABLE. EDM USED NO SOLVENTS OR CHEMICALS IN THIS PROCESS.

THE RECLAIMED METAL WAS SOLD OR RETURNED TO ITS SUPPLIERS. EDM TOOK THE WASTE INSULATION MATERIAL TO THE TOPOGRAPHIC SWALE AREA BEHIND THE PROCESSING BUILDING AND PLACED IT ON THE GROUND, OVER TIME FORMING THE RESIDUAL PILE WHICH EXISTS NOW.

IN 1974, PURSUANT TO A CONSENT ORDER WITH THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL RESOURCES (PADER), EDM INSTALLED A LEACHATE COLLECTION AND TREATMENT SYSTEM ONSITE IN ORDER TO MONITOR, COLLECT, AND TREAT LEACHATE EMANATING FROM THE FLUFF PILE. DUE TO THE HIGH BOD CONCENTRATIONS IN THE LEACHATE AT THAT TIME, A SECONDARY TREATMENT SYSTEM WAS DESIGNED AND INSTALLED. THIS PLANT UTILIZES AERATION AND MICROORGANISMS TO BRING THE EFFLUENT BOD WITHIN GUIDELINES ESTABLISHED BY THE NPDES PERMIT. THE TREATMENT PLANT IS STILL OPERATIONAL AND IS PART OF A LEACHATE

MANAGEMENT SYSTEM WHICH ALSO INCLUDES EROSION CONTROL MEASURES, SURFACE DIVERSION DITCHES, AND TWO SHALLOW GROUND WATER INTERCEPTION TRENCHES WHICH CONVEY LEACHATE TO THE LEACHATE TREATMENT PLANT.

THE LEACHATE DIVERSION DITCHES PARALLEL THE NORTHERN AND SOUTHERN BOUNDARIES OF THE WASTE PILE. THE SOUTHERN DIVERSION DITCH CONVEYS LEACHATE TO THE TREATMENT PLANT VIA AN EQUALIZATION LAGOON. THE NORTHERN (INTERIOR) DIVERSION DITCH TERMINATES AT THE RUNOFF LAGOON, WHERE RUNOFF EITHER EVAPORATES OR INFILTRATES TO SHALLOW GROUND WATER WHICH IS INTERCEPTED BY THE SECONDARY GROUND WATER COLLECTION TRENCH, AND PUMPED TO THE TREATMENT PLANT.

THE MAIN GROUND WATER INTERCEPTOR TRENCH IS LOCATED ALONG ALMOST THE FULL EAST-WEST LENGTH OF THE PILE, BETWEEN THE SOUTHERN LEACHATE DIVERSION DITCH AND THE INTERMITTENT STREAM. AT THE SOUTHWEST END OF THE PILE, A SECONDARY COLLECTION TRENCH RUNS APPROXIMATELY NORTH-SOUTH TO COLLECT SHALLOW SUBSURFACE LEACHATE AT THE WEST TOE OF THE PILE. THE TRENCHES ARE APPROXIMATELY 6 TO 10 FEET DEEP. THE LEACHATE FROM THE MAIN TRENCH DISCHARGES INTO THE WASTE WATER TREATMENT PLANT; THE LEACHATE FROM THE SECONDARY TRENCH IS CONVEYED TO A SUMP JUST SOUTHWEST OF THE TREATMENT PLANT, FROM WHICH IT IS PUMPED DIRECTLY TO THE PLANT FOR TREATMENT.

THE LEACHATE TREATMENT PLANT IS LOCATED IN THE SOUTHWEST CORNER OF THE PROPERTY. THE EQUALIZATION LAGOON IS LOCATED APPROXIMATELY 300 FEET TO THE NORTHEAST, AT THE TOE OF THE PILE. THIS LAGOON IS LINED WITH 30 MIL POLYVINYL CHLORIDE AND FEEDS LEACHATE INFLUENT TO THE TREATMENT PLANT. THE TREATMENT PROCESS CONSISTS OF CLARIFICATION AND ACTIVATED SLUDGE BIOLOGICAL TREATMENT. THE EFFLUENT DISCHARGE ENTERS THE INTERMITTENT STREAM TRIBUTARY TO THE LITTLE SCHUYLKILL RIVER. DAILY FLOWS AVERAGE APPROXIMATELY 3000 GALLONS.

EDM TERMINATED OPERATIONS IN 1977 WHEREUPON IT TRANSFERRED SITE OWNERSHIP TO THEODORE SALL, INC. (SALL). IN 1979 AND 1980, THE RUSH TOWNSHIP BOARD OF SUPERVISORS WROTE LETTERS TO DIVERSIFIED INDUSTRIES, INC., SALL'S PARENT COMPANY, ON BEHALF OF AREA RESIDENTS, COMPLAINING OF ODORS FROM THE SITE AND EXPRESSING HEALTH CONCERNS.

IN 1983 AND 1984, PADER CONDUCTED CHEMICAL AND AQUATIC BIOLOGICAL INVESTIGATIONS OF THE LITTLE SCHUYLKILL RIVER (LSR) AND ALL OF ITS TRIBUTARIES AND POINT SOURCE DISCHARGES. THESE STUDIES INCLUDED SAMPLING OF THE INTERMITTENT STREAM AT THE EDM SITE AND THE EFFLUENT FROM THE EDM LEACHATE TREATMENT PLANT. PADER STATED THAT UNDER THE ACID-IMPACTED CONDITIONS FOUND IN THE LSR, "THE CONFIRMED COMPLETE ABSENCE OF ANY AQUATIC MACROBENTHIC COMMUNITY IS EXPECTED." THIS REPORT CONCLUDED THAT AN EVALUATION OF THE EFFECTS OF THE EDM SITE ON THE LSR COULD NOT BE MADE DUE TO THE PREVAILING ACID MINE DRAINAGE DEGRADATION IN THIS SECTION OF THAT RIVER.

A SMALL FIRE WAS EXTINGUISHED ON THE EASTERN END OF THE SOUTH FACE OF THE PILE IN JUNE, 1979. ON NOVEMBER 2, 1979, THE HOMETOWN FIRE CO. RESPONDED TO A REPORT OF A FIRE AT THE SITE. ON NOVEMBER 20, 1979, SMOLDERING WAS NOTED IN THE SAME GENERAL AREA OF THE PREVIOUS FIRES AND WAS EXTINGUISHED WITH FIRE RETARDANT AND WATER. SUBSEQUENTLY, SALL EXCAVATED THE BURN AREA TO ENSURE THAT THE FIRE WAS EXTINGUISHED. THE AREA WHERE SMOLDERING FIRES WERE NOTED IS LIMITED TO A SMALL PORTION OF THE PILE IN THE VICINITY OF THE SECONDARY LEACHATE SEEP (SOUTHEAST SIDE OF THE FLUFF PILE). TEMPERATURE MONITORING POINTS WERE INSTALLED AND HAVE BEEN MONITORED WEEKLY FOR THE PAST TWELVE YEARS. LABORATORY TESTING HAS ESTIMATED THAT A CRITICAL TEMPERATURE OF APPROXIMATELY 290 DEGREES FAHRENHEIT MAY CAUSE THIS MATERIAL TO SMOLDER. THE DATA FROM THESE SENSORS INDICATE THAT SMOLDERING FIRES WERE OF A SURFICIAL ORIGIN, POSSIBLY THE RESULT OF CAMPFIRE SET BY SITE TRESPASSERS.

IN 1985, TODD GIDDINGS AND ASSOCIATES, INC., COMPLETED A SITE EVALUATION REPORT FOR SALL. THIS EVALUATION INCLUDED SAMPLING AND ANALYSIS OF SURFACE WATER, LEACHATE, GROUND WATER, FLUFF, AND SEDIMENT. THESE

INVESTIGATIONS DETERMINED THAT THE FLUFF CONTAINS PCBS, LEAD, AND FAILS THE EP TOXICITY TEST FOR LEAD. ADDITIONALLY, VARIOUS INORGANICS WERE DETECTED IN THE DOWNGRAIENT MONITORING WELL. THE STUDY CONCLUDED THAT NO CONTAMINATED GROUND WATER WAS LEAVING THE SITE, THAT FLUFF FROM THE PILE LEFT THE SITE VIA EROSION/SEDIMENTATION AND RUNOFF, AND THAT THE LEACHATE TREATMENT PLANT OPERATED WITHIN THE NPDES LIMITS WITH THE EXCEPTION OF AMMONIA-NITROGEN.

IN 1985, THE EPA FIELD INVESTIGATION TEAM SUBCONTRACTOR, NUS CORPORATION, SAMPLED THE SITE'S SURFACE SOIL, SURFACE WATER, STREAM BOTTOM SEDIMENT, LEACHATE, LEACHATE RUNOFF PATH SEDIMENT, AND GROUND WATER, TO PROVIDE DATA IN ORDER FOR EPA TO DETERMINE WHETHER THIS SITE SHOULD BE PROPOSED FOR LISTING ON THE NATIONAL PRIORITIES LIST (NPL). EPA PLACED THE SITE ON THE NPL ON OCTOBER 5, 1989, 54 FED. R. 41036 (OCT. 4, 1989).

IN 1987, EPA ISSUED A UNILATERAL ORDER TO DIVERSIFIED INDUSTRIES, INC., AND ITS SUBSIDIARY, THEODORE SALL, INC., FOR INSTALLATION OF A SECURITY FENCE AROUND THE SITE. THE FENCE WAS SUBSEQUENTLY INSTALLED BY THOSE PARTIES. ON OCTOBER 19, 1987, THEODORE SALL, INC., AND AT & T NASSAU METALS CORPORATION SIGNED AN ADMINISTRATIVE ORDER ON CONSENT WITH EPA FOR THE CONDUCT OF A REMEDIAL INVESTIGATION/FEASIBILITY STUDY FOR THE SITE.

PRESENTLY, THE SITE IS UNUSED. THE WASTE WATER TREATMENT PLANT CONTINUES TO BE OPERATED BY SALL UNDER A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FROM THE PADER BUREAU OF WATER QUALITY. THE PROPERTY IS OVERSEEN BY A SALL EMPLOYEE WHO IS RESPONSIBLE FOR THE DAILY OPERATION OF THE WASTE WATER TREATMENT PLANT, GENERAL MAINTENANCE OF THE PLANT, RECORDING OF TEMPERATURE FROM THE PILE SENSORS AND GENERAL SECURITY. THE CARETAKER IS PRESENT ON SITE FOR APPROXIMATELY HALF OF THE DAY FOR FIVE DAYS EACH WEEK. THE BUILDING HOUSING THE PROCESSING EQUIPMENT WAS SOLD TO BERNARD GORDON.

CURRENT LAND USE INCLUDES OPEN AND RESIDENTIAL LANDS TO THE NORTH, WEST, AND SOUTH/SOUTHEAST, AND SEVERAL BUSINESS/INDUSTRIAL FACILITIES TO THE EAST. SPECIFICALLY, THE SITE IS BORDERED BY A RESIDENCE AND PRIVATELY OWNED FOREST LAND TO THE NORTH. ADJACENT TO THE EASTERN BORDER OF THE SITE IS THE LINCOLN AVENUE BUILDING WHICH FORMERLY HOUSED THE METALS RECLAMATION PROCESS. THIS BUILDING IS NOW SEPARATE FROM THE SALL PROPERTY AND IS KNOWN AS THE BERNARD GORDON PROPERTY. THIS BUILDING IS PRESENTLY PARTIALLY OCCUPIED BY A TRAILER HOME ASSEMBLY OPERATION. OTHER COMMERCIAL OPERATIONS NEAR THE SITE ALONG LINCOLN AVENUE INCLUDE A SHIPPING FACILITY (UPS), AN AUTO PARTS/JUNKYARD OPERATION, A HEAVY FREIGHT DEPOT (YELLOW FREIGHT), AND A PIGMENTS MANUFACTURER (SIBERLINE COMPANY). STATE GAME LANDS ARE LOCATED TO THE WEST ALONG THE BANKS OF THE LITTLE SCHUYLKILL RIVER.

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III. COMMUNITY PARTICIPATION

IN ACCORDANCE WITH SECTIONS 113 (K)(2) AND 117 OF CERCLA, ON FEBRUARY 5, 1991, EPA PLACED A QUARTER PAGE ADVERTISEMENT IN THE LEHIGHTON TIMES NEWS ANNOUNCING THE 30-DAY COMMENT PERIOD ON THE PROPOSED PLAN FOR THE FIRST AND SECOND OPERABLE UNITS OF THE EASTERN DIVERSIFIED METALS SITE. ALSO ANNOUNCED WAS THE AVAILABILITY OF THE PROPOSED PLAN AND RI/FS REPORTS AS PART OF THE ADMINISTRATIVE RECORD IN THE SITE INFORMATION REPOSITORY AT THE RUSH TOWNSHIP BOARD OF SUPERVISORS.

THE PUBLIC COMMENT PERIOD BEGAN FEBRUARY 5, 1991, AND ENDED MARCH 6, 1991. A PUBLIC MEETING WAS CONDUCTED ON FEBRUARY 19, 1991 IN ORDER TO FACILITATE RECEIVING THE PUBLIC'S COMMENTS AND CONCERNS WITH THE PROPOSED ACTION FOR THE FIRST AND SECOND OPERABLE UNITS AT THE SITE. LOCAL CITIZENS COMMENTS WERE CHIEFLY RELATED TO WANTING REMEDIATION OF THE ENTIRE SITE TO OCCUR AT THIS TIME; SOME CITIZENS ALSO EXPRESSED HEALTH CONCERNS REGARDING AN ONSITE MOBILE INCINERATOR. SPECIFIC COMMENTS AND CONCERNS RAISED BY THE LOCAL COMMUNITY ARE ADDRESSED IN THE

RESPONSIVENESS SUMMARY.

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IV. SCOPE AND ROLE OF OPERABLE UNITS

THE EASTERN DIVERSIFIED METALS SITE HAS BEEN DIVIDED INTO THREE OPERABLE UNITS (OUS), OR SITE COMPONENTS, IN ORDER TO EFFECTIVELY ADDRESS THE COMPLEX CONTAMINATION PROBLEMS PRESENT IN THE VARIOUS ENVIRONMENTAL MEDIA. THE DIVISIONS ARE AS FOLLOWS:

- OU1 - "HOTSPOT" AREAS (THOSE AREAS OF FLUFF AND SOILS
CONTAMINATED WITH PCBS AND DIOXIN ABOVE TARGET LEVELS)
 - * SEDIMENTS AND SOILS CONTAMINATED WITH METALS ABOVE TARGET LEVELS
 - * MISCELLANEOUS DEBRIS
- OU2 - GROUND WATER
- OU3 - REMAINDER OF THE SITE, IN PARTICULAR THE REMAINDER OF THE FLUFF PILE

THIS ROD INCLUDES A FINAL REMEDY FOR OU1 AND AN INTERIM REMEDY FOR OU2. THE REMEDY FOR OU1 ALLOWS FOR EXPEDITED ACTION ON THE PRINCIPAL THREATS TO HUMAN HEALTH AND THE ENVIRONMENT AT THE SITE POSED BY ELEVATED LEVELS OF DIOXIN, PCBS, COPPER, LEAD, AND ZINC IN THE FLUFF, SEDIMENTS, AND SOILS. MISCELLANEOUS DEBRIS IS ADDRESSED AS WELL.

THE DEEPENED TRENCH SYSTEM AND FURTHER STUDY OF DEEP GROUND WATER FOR OU2 WILL ADDRESS THE THREAT POSED TO HUMAN HEALTH AND THE ENVIRONMENT BY ORGANIC AND INORGANIC CONTAMINANTS IN THE SHALLOW GROUND WATER SYSTEM. OU2 IS AN INTERIM REMEDY WHICH PROVIDES FOR EXPEDITED ACTION TO ADDRESS HEALTH THREATS FROM THE SHALLOW GROUND WATER SYSTEM WHILE ALLOWING FURTHER STUDY OF DEEP GROUND WATER CLEANUP ALTERNATIVES.

OU3 WILL CONSIST OF THE REMEDY SELECTION FOR THE REMAINDER OF THE SITE, IN PARTICULAR, THE REMAINDER OF THE FLUFF PILE. THIS APPROACH TO REMEDIATION WILL ALLOW FOR EXPEDITED ACTION TO ADDRESS THE PRINCIPAL THREATS AT THE SITE WHILE EVALUATION OF GROUND WATER AND FLUFF PILE CLEANUP ALTERNATIVES IS COMPLETED. THIS ROD DOES NOT ADDRESS ANY FINAL REMEDIAL ACTION WITH RESPECT TO OU3. EPA ANTICIPATES A SUBSEQUENT, FINAL ACTION ROD TO ADDRESS OU3, ONCE IT COMPLETES ADDITIONAL STUDIES ON HOW BEST TO CONTAIN OR TREAT THE ENORMOUS QUANTITY OF PLASTIC FLUFF NOT WITHIN THE "HOTSPOTS".

THE REMEDY FOR OU1 WILL PREVENT FUTURE EXPOSURE, ELIMINATE THE TOXICITY OF DIOXIN AND PCBS VIA THERMAL DESTRUCTION, REDUCE THE VOLUME OF CONTAMINATED MEDIA BY 80 PERCENT AFTER INCINERATION, AND ELIMINATE MOBILITY BY DESTROYING THE ORGANICS AND STABILIZING THE METALS CONTAMINATED INCINERATOR RESIDUALS FOR OFFSITE DISPOSAL OR CONSOLIDATION ONSITE WITH OTHER MEDIA.

STABILIZING THE INCINERATOR RESIDUALS AND METALS CONTAMINATED SEDIMENTS AND SOILS, IF NECESSARY, WILL REDUCE TOXICITY AND MOBILITY BY CHEMICALLY AND/OR PHYSICALLY BINDING CONTAMINANTS IN THE MATRIX. DISPOSING OF TREATED AND UNTREATED MATERIALS IN EITHER AN OFFSITE MUNICIPAL LANDFILL OR THROUGH CONSOLIDATION WITH THE REMAINDER OF THE FLUFF PILE, IF AN ONSITE CONTAINMENT REMEDY IS SELECTED FOR THAT OU (OU3), WILL PREVENT CONTACT AND FURTHER REDUCE MOBILITY.

UPGRADING SURFACE WATER RUNON/RUNOFF CONTROLS BY DEEPENING EXISTING TRENCHES, FORTIFYING BERMS, AND ADDING ADDITIONAL PUMPING AND PIPING SYSTEMS AS NECESSARY WILL DECREASE FLUFF AND CONTAMINANT TRANSPORT TO THE GROUND WATER AND SURFACE WATER THEREBY REDUCING HUMAN AND ANIMAL CONTACT.

THE INTERIM REMEDY FOR OU2 WILL REDUCE CONTAMINANT MOBILITY BY UPGRADING

THE SHALLOW GROUND WATER COLLECTION AND TREATMENT SYSTEM. THE ENHANCED SYSTEM WILL COLLECT ANY SHALLOW GROUND WATER WHICH CURRENTLY UNDERFLOWS THE EXISTING INTERCEPTOR TRENCHES AND DISCHARGES TO THE INTERMITTENT STREAM VIA DIRECT DISCHARGE OR SEEPAGE. TOXICITY WILL BE REDUCED THROUGH ENHANCED TREATMENT OF THE COLLECTED LEACHATE.

THE REMEDIAL ACTIONS INCLUDED IN THE FIRST AND SECOND OPERABLE UNITS WILL ADDRESS THE PRINCIPAL HUMAN HEALTH AND ENVIRONMENTAL THREATS POSED BY SITE CONDITIONS. THE REMEDY FOR THE FIRST AND SECOND OPERABLE UNITS WILL ALLOW FOR THE PRINCIPAL THREATS TO BE ADDRESSED WHILE THE INVESTIGATIONS CONTINUE ON THE DEEP GROUND WATER PORTION OF OU2 AND OU3, THE REMAINDER OF THE SITE. AS PART OF OU2, A LIMITED STUDY WHICH MAY INCLUDE ADDITIONAL ANALYSIS OF THE EXTENT OF CONTAMINATION, TECHNICAL AND COST EFFECTIVENESS ESTIMATES FOR A DEEP GROUND WATER REMEDIATION SCHEME, AND THE POTENTIAL EFFECTS OF REMEDIATION ON DOWNGRAIENT WETLANDS. DATA GENERATED DURING THE INTERIM ACTION WILL BE USED TO DETERMINE WHEN AND WHERE THE RESTORATION OF GROUND WATER IS FEASIBLE. THE INTERIM REMEDY MAY BE INCORPORATED INTO THE DESIGN OF THE SITE REMEDY SPECIFIED IN THE FINAL ACTION ROD FOR OU2.

THE INVESTIGATIONS TO BE COMPLETED ON OU2 AND OU3 WILL IDENTIFY FINAL REMEDIES AND CLEANUP LEVELS FOR GROUND WATER AND THE REMAINDER OF THE FLUFF PILE. THE FINAL SELECTED ACTIONS FOR GROUND WATER (OU2), BOTH SHALLOW AND DEEP, AND THE REMAINDER OF THE FLUFF PILE (OU3) WILL BE PRESENTED IN FUTURE RODS FOR THOSE OPERABLE UNITS AFTER ADDITIONAL INFORMATION HAS BEEN COLLECTED AND EVALUATED.

#SSC

V. SUMMARY OF SITE CHARACTERISTICS

A. ENVIRONMENTAL SETTING AND CLIMATE

THE SITE IS LOCATED IN A SPARSELY POPULATED RURAL AREA IN HOMETOWN, SCHUYLKILL COUNTY. NEARBY TOWNS INCLUDE TAMAQUA WHICH IS APPROXIMATELY 2.5 MILES TO THE SOUTHEAST. CURRENT LAND USE SURROUNDING THE SITE INCLUDES OPEN AND RESIDENTIAL LANDS TO THE NORTH, WEST, AND SOUTH/SOUTHEAST, AND SEVERAL BUSINESS/INDUSTRIAL FACILITIES TO THE EAST. THE SITE IS BORDERED BY A RESIDENCE AND PRIVATELY OWNED FOREST LAND TO THE NORTH. ADJACENT TO THE EASTERN BORDER OF THE SITE IS THE LINCOLN AVENUE BUILDING WHICH FORMERLY HOUSED THE METALS RECLAMATION PROCESS. STATE-OWNED GAME LANDS ARE LOCATED TO THE WEST, ALONG THE BANKS OF THE LITTLE SCHUYLKILL RIVER. SURROUNDING LAND USE IN SCHUYLKILL COUNTY IS PRIMARILY AGRICULTURAL (82.7 PERCENT). APPROXIMATELY 5.3 PERCENT OF THE AREA IS RESIDENTIAL, 4.5 PERCENT IS USED FOR MANUFACTURING, COMMERCIAL, OR MINING APPLICATIONS, AND THE REMAINING 7.5 PERCENT IS UNDEVELOPED.

B. REGIONAL GEOLOGY, HYDROGEOLOGY, HYDROLOGY

SOILS

SOILS ON THE SITE HAVE FORMED IN COLLUVIUM, ALONG DRAINAGE WAYS AND IN DEPRESSED AREAS. THE SOILS ARE DEEP, POOR TO MODERATELY WELL-DRAINED WITH SLOW TO MODERATELY SLOW PERMEABILITY AND MEDIUM RUNOFF. THE LOWER PART OF THE SUBSOIL LAYER (WHICH BEGINS APPROXIMATELY 20 TO 40 INCHES FROM GROUND LEVEL) CONTAINS A FIRM AND BRITTLE FRAGIPAN THAT RESTRICTS VERTICAL WATER FLOW AND FACILITATES LATERAL FLOW OF SHALLOW SUBSURFACE WATERS. DEPTH TO BEDROCK MAY BE 60 TO 96 INCHES OR MORE.

GEOLOGY

BEDROCK BENEATH THE SITE IS THE MIDDLE MEMBER OF THE MISSISSIPPIAN AGE MAUCH CHUNK FORMATION. THE MAUCH CHUNK IS GENERALLY DESCRIBED AS PREDOMINANTLY COMPOSED OF GRAYISH-RED SILTSTONES AND SHALES, AND GRAYISH-RED-PURPLE SANDSTONES. THE MAUCH CHUNK FORMATION IS OVERLAIN BY THE POTTSVILLE FORMATION, AND UNDERLAIN BY THE POCONO FORMATION. BOTH CONTACTS ARE CONSIDERED TO BE TRANSITIONAL, AND BOTH THE POTTSVILLE AND

POCONO ARE CHARACTERIZED BY COARSE-GRAINED YELLOW AND GRAY SANDSTONE AND CONGLOMERATE LITHOLOGIES. TOPOGRAPHICALLY, THE MAUCH CHUNK TENDS TO BE A VALLEY-FORMER, DUE TO THE GREATER RESISTANCE TO EROSION WHICH TYPIFIES THE MORE MASSIVE POTTSVILLE AND POCONO FORMATIONS.

HYDROGEOLOGY

WATER IS TRANSMITTED THROUGH THE MAUCH CHUNK PRIMARILY THROUGH FRACTURES, JOINTS, AND ALONG PERMEABLE BEDDING ZONES. THE FORMATION HAS LOW TO MODERATE INFILTRATION CAPACITY AND PROBABLY LOW TO MODERATE AQUIFER POTENTIAL. IN GENERAL, THE MAUCH CHUNK IS DESCRIBED AS YIELDING SMALL TO MODERATE SUPPLIES OF GOOD QUALITY WATER. MAUCH CHUNK GROUND WATER IN THE SCHUYLKILL RIVER BASIN AREA IS REPORTED TO HAVE A MEDIAN PH VALUE OF 7.7 AND A MEDIAN SPECIFIC CONDUCTANCE VALUE OF 120 MICRO MHOS/CM.

SHALLOW GROUND WATER OCCURS IN LIMITED QUANTITIES UNDER BOTH PERCHED AND WATER TABLE CONDITIONS IN THE OVERBURDEN. DYNAMICS OF GROUND WATER FLOW IN THE OVERBURDEN ARE BASICALLY THOSE OF POROUS MEDIA FLOW, WHERE PRIMARY PERMEABILITY DOMINATES AND THE SYSTEM IS ASSUMED TO BE ESSENTIALLY HOMOGENEOUS (DESPITE THE OBVIOUS PRESENCE OF CERTAIN INHOMOGENEITIES). PERCHED WATER IN THE FLUFF PILE WAS ENCOUNTERED IN THE EASTERN PILE PIEZOMETER. PERCHED FLOW OCCURS IN SOME AREAS DUE TO THE PRESENCE OF FRAGIPANS IN THE COLLUVIAL SOIL. THIS FLOW COMPONENT CARRIES LEACHATE FROM THE PILE, SOME OF WHICH IS INTERCEPTED BY THE EXISTING INTERCEPTOR TRENCH SYSTEM AND CONVEYED TO THE LEACHATE TREATMENT PLANT.

UNDERLYING THE PERCHED FLOW ZONE, A LOCAL GROUND WATER SYSTEM IS PRESENT IN THE OVERBURDEN. THE OVERBURDEN IS DRY IN SOME AREAS AND SATURATED IN OTHERS, WITH CLASSICAL POROUS MEDIA FLOW POSSIBLE ONLY IN THE SOUTHWEST SECTION OF THE SITE, NEAR THE HEADWATERS OF THE INTERMITTENT STREAM. THE GROUND WATER QUALITY DATA COLLECTED IN THE RI INDICATES THAT THE OVERBURDEN FLOW SYSTEM RECHARGES THE UPPER BEDROCK; THUS VERTICAL DOWNWARD FLOW OCCURS, AS WELL AS LATERAL FLOW.

HORIZONTALLY, FLOW IN THE OVERBURDEN IS DIRECTED SOUTHWESTWARD ACROSS THE SITE AT APPROXIMATELY 0.11-0.13 FEET PER FOOT. HOWEVER, IT SHOULD BE NOTED THAT MUCH OF THE GROUND WATER WHICH ENTERS THE OVERBURDEN LIKELY RECHARGES THE BEDROCK RATHER THAN FLOWING Laterally, AS EVIDENCED BY THE EXTENSIVE DRY SEASONAL CONDITIONS ABOVE THE BEDROCK. IT APPEARS THAT THE ONLY SUBSTANTIAL LATERAL FLOW IN THE SITE OVERBURDEN MAY OCCUR IN THE SOUTHWESTERN PORTION OF THE SITE, WHERE WELLS MW-3/O AND MW-6/O CONTAIN WATER YEAR-AROUND. BASED ON CONSTRUCTED PIEZOMETRIC SURFACES, THE OVERBURDEN FLOW SYSTEM RECHARGES THE INTERMITTENT STREAM ALONG ITS LOWER LENGTH. SINCE THE LOWER REACH OF THE STREAM IS KNOWN TO FLOW YEAR-ROUND, IT IS EVIDENT THAT THIS FLOW IS SUSTAINED BY THE SHALLOW SYSTEM IN THE SOUTHWEST PORTION OF THE SITE. THIS IS CONSISTENT WITH THE SATURATED CONDITIONS AT MW-3/O AND MW-6/O, VERIFYING SUSTAINED LATERAL FLOW THROUGH THE OVERBURDEN IN THE SOUTHWEST CORNER OF THE SITE.

MOST GROUND WATER AT THE SITE OCCURS IN JOINTS, FRACTURES, PERMEABLE INTERBEDS, AND WEATHERED ZONES IN THE BEDROCK. WATER WAS PRESENT IN MULTIPLE THIN ZONES SEPARATED BY TWO TO SEVERAL TENS OF FEET DURING THE MONITORING WELL INSTALLATIONS. COMMONLY, GROUND WATER CONDITIONS IN BEDROCK OF THIS TYPE ARE COMPLEX DUE TO INTRICATE LOCALIZED LITHOLOGICAL AND STRUCTURAL CONTROLS. THUS, GROUND WATER MAY BE UNDER CONFINED PERMEABILITY, AND POSSIBLY UNCONFINED CONDITIONS IN PERMEABLE VERTICAL FRACTURES OR EXTENSIVE NEAR-SURFACE WEATHERED ZONES.

THE VERTICAL HEAD CONDITIONS (VARYING FROM STRONG DOWNWARD TO SLIGHT UPWARD) AT THE SITE VERIFY THE COMPLEXITY OF GROUND WATER CONDITIONS. HOWEVER, IT CAN BE OBSERVED THAT THE WATER LEVELS MEASURED REFLECT THE POTENTIAL FOR HYDRAULIC CONNECTION AMONG THE THREE AQUIFER ZONES MONITORED.

FLOW IN THE SHALLOW BEDROCK ZONE IS SIMILAR IN DIRECTION AND GRADIENT TO

THE OVERBURDEN. WATER LEVEL ELEVATION CONTOURS INDICATE THAT FLOW OCCURS BELOW THE ELEVATION OF THE INTERMITTENT STREAM BED, IN A DIRECTION TOWARDS THE LITTLE SCHUYLKILL RIVER. THUS THE DIRECT DISCHARGE POINT FOR THE SHALLOW BEDROCK GROUND WATER FLOW APPEARS TO BE THE LITTLE SCHUYLKILL RIVER, WHICH IS THE ONLY REGIONAL DISCHARGE POINT IN THE AREA. THE LATERAL HYDRAULIC GRADIENT IN THE INTERMEDIATE BEDROCK AQUIFER ALSO INDICATES FLOW TOWARD THE LITTLE SCHUYLKILL RIVER.

AN INVENTORY OF GROUND WATER USAGE WAS COMPLETED FOR THE EDM SITE VICINITY. FIGURE 3 SHOWS THE LOCATIONS OF WATER WELLS IDENTIFIED DURING THE RI. ALL OF THE WELLS IDENTIFIED ARE TOPOGRAPHICALLY UPGRADIENT OF THE SITE. WELL DEPTHS RANGE FROM 90 FEET TO 600 FEET. A NUMBER OF RESIDENTS HAVE REPORTED FLOWING ARTESIAN CONDITIONS, INDICATING A POSSIBLE RECHARGE AREA TO THE NORTH, I.E., STILL CREEK RESERVOIR AREA. WATER QUALITY WAS REPORTED TO BE GOOD IN MOST CASES, ALTHOUGH SOME WELLS HAD TASTE, ODOR, AND SEDIMENT PROBLEMS UNRELATED TO THE SITE.

HYDROLOGY

THIS PART OF THE SCHUYLKILL RIVER BASIN RECEIVES AN ANNUAL AVERAGE RAINFALL OF 45 INCHES. BASIN MAXIMA FOR RUNOFF (30 INCHES) AND RAINFALL (49 INCHES) OCCUR NEAR TAMAQUA AND DECREASE FROM NORTH TO SOUTH. PEAK RUNOFF OCCURS DURING THE PERIOD FROM FEBRUARY TO APRIL. THE RUNOFF LOW POINT IS GENERALLY DURING AUGUST TO OCTOBER, ALTHOUGH AT TAMAQUA, LOW RUNOFF TYPICALLY OCCURS IN JULY.

SURFACE RUNOFF FROM THE SITE FLOWS PREDOMINANTLY IN A WEST-SOUTHWESTERLY DIRECTION, TO THE SMALL UNNAMED INTERMITTENT STREAM WHICH FLOWS WEST ALONG THE SOUTHERN BORDER OF THE SITE AND DRAINS INTO THE LITTLE SCHUYLKILL RIVER.

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VI. NATURE AND EXTENT OF CONTAMINATION

A. REMEDIAL INVESTIGATION (RI)

EPA DESIGNED THE RI FIELD ACTIVITIES AND ANALYTICAL PROGRAM TO DEFINE THE EXTENT OF ENVIRONMENTAL CONTAMINATION, IDENTIFY MIGRATION PATHWAYS, AND PROVIDE DATA TO SUPPORT A FEASIBILITY STUDY OF POTENTIAL REMEDIAL ACTIONS. THE SCOPE OF THE RI INCLUDED SAMPLING AND ANALYSIS AS NECESSARY TO FILL DATA GAPS IN THE HISTORICAL DATABASE. LEACHATE/SEEPS, SURFACE SOILS, SUBSURFACE SOILS, SURFACE WATERS, STREAM BED SEDIMENTS, BIOASSAYS, AIR, AND GROUND WATER SAMPLING WERE CONDUCTED TO CHARACTERIZE THE QUALITY OF THESE MEDIA (SAMPLING LOCATIONS ARE SHOWN IN FIGURES 4-9). IN ADDITION TO SAMPLING AND ANALYSES, LIMITED STUDIES OF THE HYDROGEOLOGY AND HYDROLOGY OF THE SITE WERE CONDUCTED THROUGH FIELD MAPPING AND AQUIFER TESTING.

B. SUMMARY OF RI FINDINGS

A SUMMARY OF THE RESULTS FROM PREVIOUS INVESTIGATIONS AND FROM THE RI SAMPLING PROGRAM ARE SHOWN BELOW.

FLUFF

A. PCB CONCENTRATIONS RANGED FROM 1.7 TO 5560 MILLIGRAMS PER KILOGRAM (MG/KG). THE HIGHEST CONCENTRATION WAS T-10 FROM THE VICINITY OF THE MAIN LEACHATE SEEP. IN ORDER TO FURTHER DELINEATE THIS AREA OF ELEVATED PCB CONCENTRATIONS, AN ADDITIONAL SIX SAMPLES WERE SUBSEQUENTLY COLLECTED IN THE VICINITY OF T-10. THE T-10 SAMPLE CLUSTER (T-10, T-10R, T-10SW, T-10SE, T-10NE, T-10NW, T-10RC) AS SHOWN ON FIGURE 8, IS DEFINED AS THE PCB "HOTSPOT" AREA OF THE FLUFF PILE. THIS AREA REPRESENTS APPROXIMATELY FIVE PERCENT OF THE PILE AND HAS AN ESTIMATED VOLUME OF 4,740 CUBIC YARDS. SLIGHTLY ELEVATED PCB CONCENTRATIONS OF 40 MG/KG WERE ALSO FOUND AT T-26. MEAN PCB CONCENTRATIONS IN THE FLUFF WERE 15.7 MG/KG, EXCLUDING THE THREE HIGHEST VALUES FROM THE HOTSPOT AREA.

B. TOTAL LEAD CONCENTRATIONS RANGED FROM 1490 MG/KG TO GREATER THAN 40,000 MG/KG THROUGHOUT THE PILE. THE MEAN CONCENTRATION WAS 11,450 MG/KG. BOREHOLE RESULTS INDICATE THAT LEAD CONCENTRATIONS ARE FAIRLY CONSISTENT WITH DEPTH. LEAD WAS A PROBABLE CONSTITUENT OF INSULATION FILLERS IN THE FORM OF LEAD PHTHALATE.

C. CONCENTRATIONS OF DIOXIN AND DIBENZOFURANS WITH A CALCULATED TOXIC EQUIVALENCE (TE) TO 2,3,7,8-TETRACHLORO-P-DIBENZODIOXIN OF 18.5 MICROGRAMS PER KILOGRAM (UG/KG) RESULTED FROM ANALYSIS OF A COMPOSITE SAMPLE OF FLUFF FROM THE AREA WHERE FIRES HAD OCCURRED PREVIOUSLY. THIS AREA IS ON THE SOUTHERN RIM OF THE PILE BETWEEN THE SECONDARY LEACHATE SEEP AND THE MAIN LEACHATE SEEP; THE SAMPLING LOCATION IS SHOWN AS SFD-1 ON FIGURE 8. THIS AREA IS REFERRED TO AS THE DIOXIN "HOTSPOT" AREA AND EPA SUSPECTS THAT THIS SAMPLE REPRESENTS CONDITIONS IN ONLY A VERY LIMITED AREA OF THE PILE WHERE THESE FIRES OCCURRED. THE VOLUME OF DIOXIN CONTAMINATED FLUFF IS ESTIMATED AT 500 CUBIC YARDS.

D. VOLUME ESTIMATES FOR THE HOTSPOT AREAS OF THE FLUFF PILE, WITH THE EXCEPTION OF TWO PILE BORINGS AND FOUR BACKHOE PITS, ARE BASED ON SAMPLING WHICH WAS LIMITED TO A DEPTH OF THREE FEET.

LEACHATE

A. THE STREAM BANK SEEPS ISSUE FROM UNCONSOLIDATED OVERBURDEN MATERIAL. SEEPS AT THE BASE OF THE MAIN PILE ARE RELATED TO THE SATURATED ZONES FROM WITHIN THE PILE, ABOVE THE OVERBURDEN.

B. TCE WAS DETECTED AT 44 MICROGRAMS PER LITER (UG/L) AT LS-1, A SEEP IN THE NORTH BANK OF THE INTERMITTENT STREAM ADJACENT TO THE EQUALIZATION LAGOON (REFERENCE FIGURE 6). BIS(2-ETHYLHEXYL)PHTHALATE (DEHP) AT 140 UG/L AND DI-N-OCTYLPHTHALATE (DNOP) AT 27 UG/L WERE DETECTED IN LS-2, THE MAIN LEACHATE SEEP. PCBS AT 2.6 UG/L AND 6.0 UG/L WERE DETECTED IN LS-2 AND LS-4, RESPECTIVELY.

C. COPPER, LEAD, ZINC, IRON, AND MANGANESE WERE PRESENT AT ELEVATED LEVELS IN ALL SEEPS. MAXIMUM LEVELS DETECTED WERE 6390 UG/L COPPER, 1080 UG/L LEAD, AND 8050 UG/L ZINC IN LS-2, THE MAIN LEACHATE SEEP, 93600 UG/L IRON IN LS-3, AND 12400 UG/L MANGANESE IN LS-4. BOTH LS-3 AND LS-4 ARE DOWNGRAIENT OF THE WASTE WATER TREATMENT FACILITY.

SOILS

A. DEHP AT 1,100-3,300 MG/KG AND DNOP AT 190-720 MG/KG WERE DETECTED IN SURFACE SOIL SAMPLES.

B. PCBS WERE DETECTED IN 21 OF 27 SAMPLES, WITH AN AVERAGE CONCENTRATION OF 20 MG/KG. THE NORTHWESTERN SIDE OF THE PILE ALONG THE NORTHERN DRAINAGE WAYS (REFERENCE FIGURES 2 AND 5) SHOWED THE HIGHEST CONCENTRATIONS AT 63-240 MG/KG. THE VOLUME OF SOILS CONTAMINATED WITH PCBS ABOVE TARGET LEVELS IS APPROXIMATELY 420 CUBIC YARDS. THE SOURCE OF THE HIGH LEVEL PCBS MAY BE DUE TO MIGRATION FROM THE "HOTSPOT" FOUND IN THE CENTER OF THE FLUFF PILE.

C. COMPOSITE SURFACE SOIL SAMPLES FOR DIOXIN AND DIBENZOFURAN ANALYSIS HAD A TOXICOLOGICAL EQUIVALENCE (TE) OF 0.003 UG/KG FOR THE SAMPLE OBTAINED ADJACENT TO THE PAST FIRE AREA AND 7.1 UG/KG TE FOR THE DOWNWIND SAMPLE. THE RESULTS INDICATED THAT OFFSITE TRANSPORT OF DIOXINS BY WIND-AIDED TRANSPORT OF PARTICLES IS NOT OF CONCERN AT THE SITE.

D. MAXIMUM CONCENTRATIONS FOR SITE-RELATED METALS DETECTED WERE 108,000 MG/KG FOR COPPER AND 1,920 MG/KG FOR LEAD. THE HIGHEST LEVELS ARE ASSOCIATED WITH THE NORTHERN DRAINAGE WAYS (REFERENCE FIGURES 2 AND 5). THE VOLUME OF SOILS CONTAMINATED WITH LEAD ABOVE TARGET LEVELS IS APPROXIMATELY 480 CUBIC YARDS. CONCENTRATIONS OF ZINC AND CADMIUM AT 1230 MG/KG AND 7 MG/KG, RESPECTIVELY, WERE ELEVATED ABOVE BACKGROUND LEVELS OF 70 MG/KG FOR ZINC AND THE DETECTION LIMIT FOR CADMIUM.

SUBSURFACE SOILS

A. DEHP, DNOP, AND PCBS WERE DETECTED AT LOWER CONCENTRATIONS THAN IN SURFACE SOIL SAMPLES WITH MAXIMUM CONCENTRATIONS OF 620 MG/KG, 200 MG/KG, AND 7 MG/KG, RESPECTIVELY. COPPER AND LEAD WERE PRESENT AT 650 AND 266 MG/KG, RESPECTIVELY, AT LESS THAN 12 FOOT DEPTHS.

SURFACE WATER

A. EQUALIZATION LAGOON SAMPLES TOTALED 15,700 UG/L OF PHENOLS, THE ONLY SEMI-VOLATILE COMPOUNDS DETECTED IN SURFACE WATER. MAXIMUM CONCENTRATIONS OF COPPER AT 38 UG/L, LEAD AT 4.5 UG/L, IRON AT 776 UG/L, MANGANESE AT 2780 UG/L, AND ZINC AT 369 UG/L WERE ELEVATED ABOVE STATE STANDARDS OF 4 UG/L FOR COPPER, 0.6 UG/L FOR LEAD, 300 UG/L FOR IRON, 50 UG/L FOR MANGANESE, AND 36 UG/L FOR MANGANESE.

B. SAMPLES DOWNGRAIENT OF THE JUNCTION OF THE INTERMITTENT STREAM AND THE NORTH-SOUTH DRAINAGE DITCH (POST-TREATMENT), REFLECT IRON (776 UG/L) AND MANGANESE (1,050 UG/L) LEVELS WHICH ARE TEN TIMES GREATER THAN THOSE IN THE INTERMITTENT STREAM UPGRADIENT OF THE WASTE WATER TREATMENT FACILITY (REFERENCE FIGURE 6). LEAD (2.2 UG/L) AND ZINC (369 UG/L) AT THIS POINT (SW-6) WERE PRESENT AT THREE TO TEN TIMES THE NPDES LEVELS.

SEDIMENT

A. SMALL QUANTITIES OF FLUFF PARTICLES WERE SEEN IN SEDIMENTS 23 MILES DOWNSTREAM OF THE SITE. DEHP AT 24-4,000 MG/KG AND DNOP WERE THE ONLY ORGANIC COMPOUNDS DETECTED. HIGHEST CONCENTRATIONS WERE IN THE EQUALIZATION LAGOON WITH GENERALLY DIMINISHING RESULTS DOWNSTREAM (REFERENCE FIGURES 2 AND 5).

B. PCBS AT 0.51-8.4 MG/KG WERE DETECTED IN THE INTERMITTENT STREAM BUT NOT THE LITTLE SCHUYLKILL RIVER.

C. COPPER AT 3090 MG/KG, LEAD AT 1300 MG/KG, ZINC AT 7850 MG/KG, IRON AT 54800 MG/KG, AND ALUMINUM AT 30500 MG/KG CONCENTRATIONS WERE PRESENT IN SEDIMENTS. THE VOLUME OF METALS CONTAMINATED SEDIMENTS ABOVE TARGET LEVELS REQUIRING REMEDIATION IS APPROXIMATELY 120 CUBIC YARDS.

GROUND WATER

A. SPECIFIC CONDUCTANCE READINGS INDICATE THAT THE MAIN PATHWAY FOR LEACHATE MIGRATION FROM THE PILE OCCURS IN THE WESTERN PORTION OF THE SITE, WHERE THE OVERBURDEN SUSTAINS A GROUND WATER FLOW SYSTEM.

B. THE SAME SUITE OF VOLATILE COMPOUNDS WERE IDENTIFIED IN THE ANALYSES FROM BOTH ROUNDS OF GROUND WATER SAMPLING. THE PREVALENT COMPOUNDS WERE 1,1,1-TRICHLOROETHANE AND TRICHLOROETHENE (TCE). THE HIGHEST INDIVIDUAL COMPOUND CONCENTRATION REPORTED WAS 91 UG/L OF TCE IN MW-3/O (REFERENCE FIGURE 9). TOTAL CONCENTRATIONS OF VOLATILE ORGANIC COMPOUNDS RANGED FROM NON-DETECTED TO 119 UG/L IN MW-3/O. THE SAMPLES WITH THE HIGHEST LEVELS OF VOLATILE ORGANIC COMPOUNDS WERE FROM MW-3/O, MW-2/I, MW-2/S, MW-5/S. ALL FOUR WELLS ARE LOCATED ALONG THE SOUTHERN PERIMETER OF THE FLUFF PILE, ON THE DOWNGRAIENT EDGE OF THE SITE.

C. CALCIUM, MAGNESIUM, AND MANGANESE WERE ELEVATED DOWNGRAIENT OF THE PILE WITH RESPECT TO BACKGROUND. THESE RESULTS REFLECT THE LEACHING OF MAJOR IONIC SPECIES FROM THE PILE, AND POSSIBLY THE MOBILIZATION OF NATURAL MANGANESE UNDER SLIGHT REDUCING CONDITIONS IN THE PILE LEACHATE.

AIR

A. NEITHER THE VOLATILE NOR PHENOLIC AIR ANALYSES PERFORMED DETECTED ANY ORGANIC COMPOUNDS.

MISCELLANEOUS DEBRIS

A. IN GENERAL, THE PILE IS A HOMOGENEOUS MIXTURE OF THE CHOPPED INSULATION. HOWEVER, SOME DEBRIS PILES OUTSIDE OF THE MAIN PILE, AND SOME SELECT AREAS WITHIN THE PILE, CONTAIN THE OTHER MISCELLANEOUS RUBBLE, SUCH AS UNSTRIPPED WIRE AND CABLE, METALS, AND WOODEN CABLE SPOOLS TOTALING APPROXIMATELY 14,000 CUBIC YARDS. THIS TOTAL IS ROUGHLY ESTIMATED TO BE COMPRISED OF 30 PERCENT FLUFF, 30 PERCENT WIRE AND CABLE, 30 PERCENT WOOD, SOIL AND MISCELLANEOUS MATERIALS, AND 10 PERCENT FINE-GRAINED IRON. LOCATIONS OF THE MISCELLANEOUS DEBRIS PILES ARE SHOWN ON FIGURE 10.

C. RI CONCLUSIONS

A NUMBER OF ELEMENTS AND COMPOUNDS RELATED TO THE PRESENCE OF THE FLUFF PILE WERE DETECTED IN EACH OF THE SITE MEDIA, INCLUDING:

- * BIS-(2-ETHYLHEXYL) PHTHALATE (DEHP) - PRESENT IN SURFACE SOILS, SUBSURFACE SOILS, STREAM BED SEDIMENT AND LEACHATE, BUT NOT IN GROUND WATER OR SURFACE WATER.
- * POLYCHLORINATED BIPHENYLS (PCBS OR AROCLORS) - DETECTED IN THE FLUFF, SURFACE SOILS, SUBSURFACE SOILS, AND SEDIMENTS, BUT VIRTUALLY ABSENT FROM AQUEOUS MEDIA.
- * TRICHLOROETHENE (TCE) - IN GROUND WATER MONITORING WELLS AND ONE GROUND WATER SEEP FROM THE SITE OVERBURDEN.
- * DIOXIN AND DIBENZOFURANS - DETECTED AT LOW LEVELS IN FLUFF AND SOILS ADJACENT TO THE FORMER BURN AREA OF THE PILE.
- * COPPER, LEAD, ZINC, IRON AND CALCIUM WERE ELEVATED ABOVE BACKGROUND CONCENTRATIONS IN ALL SOLID AND AQUEOUS MEDIA.
- * MANGANESE IN GROUND WATER MONITORING WELLS.

PRINCIPAL CONCLUSIONS

- * DUE TO THE LOW SOLUBILITY OF THE PHTHALATE COMPOUND IT IS POSSIBLE THAT THE DETECTION OF THESE COMPOUNDS IS A RESULT OF THE INCLUSION OF FLUFF PARTICLES IN SOIL SAMPLES RATHER THAN PHTHALATES TRANSPORTED FROM THE PILE TO THE SOIL IN WATER. THIS CONCLUSION IS SUPPORTED BY THE FACT THAT PHTHALATES WERE FOUND ONLY IN SOLID, NOT AQUEOUS, MEDIA.
- * PCBS, LIKE PHTHALATES, ARE ALSO LOW SOLUBILITY COMPOUNDS WHICH WOULD BE EXPECTED TO ADHERE TO SOIL PARTICLES OR REMAIN IN THE PLASTIC MATRIX. IT IS SUSPECTED THAT PCBS WERE USED AS PLASTICIZERS OR ADDITIVES TO PLASTICS IN THE PAST. THE INCLUSION OF FLUFF PARTICLES IN SOIL SAMPLES ALSO LIKELY EXPLAINS THE PRESENCE OF LOWER LEVEL PCBS DETECTED IN SURFACE AND SUBSURFACE SOILS AND SEDIMENTS BUT THEIR VIRTUAL ABSENCE IN AQUEOUS MEDIA.
- * LIKE PHTHALATES AND PCBS, LEAD IS PROBABLY BOUND IN LARGE PART IN THE FLUFF MATERIAL. LEAD WAS A PROBABLE CONSTITUENT OF INSULATION FILLERS IN THE FORM OF LEAD PHTHALATE.

THE PRINCIPAL CONCLUSIONS REGARDING THE DYNAMICS AND EXTENT OF MIGRATION OF SITE-RELATED CONSTITUENTS ARE AS FOLLOWS:

- * THE MAIN MECHANISM OF MIGRATION AT THE SITE IS PHYSICAL TRANSPORT BY RUNOFF AND EROSION. PARTICULATE FLUFF MATERIAL IS ERODED FROM THE PILE, AND DEPOSITED IN ONSITE SURFACE SOILS AND OFFSITE IN STREAM BED SEDIMENTS.
- * METALS ACCUMULATED IN THE INTERMITTENT STREAM SEDIMENTS MAY DISSOLVE IN THE STREAM WATER TO LEVELS WHICH ARE TOXIC

TO AQUATIC LIFE.

- * A SECONDARY MECHANISM OF MIGRATION AT THE SITE IS SEEPAGE AND OVERLAND RUNOFF OF LEACHATE DURING WET PERIODS, WHERE THE LEACHATE DIVERSION DITCHES MAY BE INSUFFICIENT TO CARRY ALL OF THE FLOW. THESE LEACHATE DISCHARGES ENTER THE STREAM DIRECTLY BY OVERLAND RUNOFF.
- * TRANSPORT OF CONTAMINATED GROUND WATER IS A POTENTIAL MIGRATION ROUTE.
- * ANOTHER SECONDARY MECHANISM OF MIGRATION AT THE SITE IS WIND EROSION, AS THE FINER PARTICULATES ARE CARRIED DURING STRONG WINDS AND DEPOSITED IN ONSITE AND OFFSITE SURFACE SOILS.

#SSR

VII. SUMMARY OF SITE RISKS

A. EXPOSURE ASSESSMENT SUMMARY

THE GOAL OF THE EXPOSURE ASSESSMENT IS TO DETERMINE THE TYPE AND MAGNITUDE OF HUMAN EXPOSURE TO THE CONTAMINANTS PRESENT AT, AND MIGRATING FROM, THE EASTERN DIVERSIFIED METALS SITE. THE EXPOSURE ASSESSMENT WAS CONDUCTED TO ESTIMATE THE RISK IMPOSED BY THE SITE IF NO REMEDIAL ACTION WAS TAKEN.

TO DETERMINE IF HUMAN AND ENVIRONMENTAL EXPOSURE TO THE CONTAMINANTS OF CONCERN MIGHT OCCUR IN THE ABSENCE OF REMEDIAL ACTION, AN EXPOSURE PATHWAY ANALYSIS WAS PERFORMED. AN EXPOSURE PATHWAY IS COMPRISED OF FOUR NECESSARY ELEMENTS: 1) A SOURCE AND MECHANISM OF CHEMICAL RELEASE; 2) AN ENVIRONMENTAL TRANSPORT MEDIUM; 3) A HUMAN OR ENVIRONMENTAL EXPOSURE POINT, AND; 4) A FEASIBLE HUMAN OR ENVIRONMENTAL EXPOSURE ROUTE AT THE POINT OF EXPOSURE. THE POTENTIAL FOR COMPLETION OF EXPOSURE PATHWAYS AT THE EASTERN DIVERSIFIED METALS SITE IS DESCRIBED IN THE FOLLOWING SECTIONS.

1. EXPOSURE POINTS

THE POTENTIAL POINTS OF EXPOSURE TO COMPOUNDS ASSOCIATED WITH THE EDM SITE ARE SHOWN BELOW:

- * AIR EXPOSURE TO FUGITIVE DUST FROM THE FLUFF PILE IN THE SITE VICINITY (NO VOLATILE COMPOUNDS WERE FOUND IN AIR TESTING DONE AT THE SITE);
- * GROUND WATER EXPOSURE FROM A HYPOTHETICAL POTABLE WELL NEAR THE SITE BOUNDARY;
- * SEDIMENT EXPOSURE IN THE INTERMITTENT STREAM;
- * SURFACE WATER EXPOSURE AT THE LEACHATE SEEPS ON SITE, THE INTERMITTENT STREAM, AND/OR THE LITTLE SCHUYLKILL RIVER;
- * EXPOSURE TO THE FLUFF IN THE PILE AND TO THE SOILS AROUND THE PILE ON THE SITE
- * EXPOSURE TO CONTAMINANTS IN EDIBLE FISH TISSUE.

2. POTENTIALLY EXPOSED POPULATIONS

THE POTENTIAL POPULATIONS WHICH MAY BE EXPOSED AT THE EXPOSURE POINTS ARE CHILDREN AGES 2-6, CHILDREN AGES 6-12, AND ADULTS INCLUDING ONSITE MAINTENANCE WORKERS, OFFSITE RESIDENTS, OFFSITE WORKERS, AND HUNTERS AND FISHERMEN. IT IS IMPORTANT TO NOTE THAT THE DERMAL CONTACT AND INGESTION EXPOSURES WITH LEACHATE, FLUFF AND SOIL FOR CHILDREN ARE CALCULATED ACCORDING TO A "FENCE DOWN" SCENARIO WHICH ASSUMES THAT THERE IS NO FENCE TO RESTRICT SITE ACCESS. IT IS ALSO IMPORTANT TO POINT OUT

THAT RISK ESTIMATES WERE BASED ON CONTINUOUS (OR CHRONIC) LIFETIME EXPOSURE TO THE SITE. THE CALCULATED RISK FOR EACH POPULATION WAS BASED ON CONTACT WITH THE EXPOSURE POINT CONCENTRATIONS IN THE VARIOUS MEDIA DURING THE ENTIRE TIME AN INDIVIDUAL WITHIN AN AGE GROUP FALLS WITHIN THAT AGE RANGE (I.E. 4 YEARS FOR AGE 2-6, 6 YEARS FOR AGE 6-12, AND 58 YEARS FOR ADULTS - TOTAL LIFETIME ASSUMED TO BE 70 YEARS). IT IS UNLIKELY THAT ANY ONE INDIVIDUAL WILL BE EXPOSED TO THE SITE IN ALL OF THE WAYS THAT ARE ASSUMED HERE FOR HIS OR HER ENTIRE LIFETIME. A SUMMARY OF THE POTENTIAL SITE-RELATED EXPOSURES TO AFFECTED POPULATIONS ANALYZED IN THIS ASSESSMENT IS SHOWN IN TABLE 1.

3. EXPOSURE POINT CONCENTRATIONS

THE SITE-RELATED EXPOSURE POINT CONCENTRATIONS WERE DETERMINED ONCE THE EXPOSURE SCENARIOS AND POTENTIALLY AFFECTED POPULATIONS WERE IDENTIFIED. IF THE TRANSPORT OF COMPOUNDS ASSOCIATED WITH A SITE IS UNDER STEADY-STATE CONDITIONS, MONITORING DATA ARE ADEQUATE TO DETERMINE POTENTIAL EXPOSURE CONCENTRATIONS. IF NO DATA ARE AVAILABLE OR IF CONDITIONS ARE TRANSIENT (SUCH AS FUGITIVE DUST IN AIR OR A MIGRATING PLUME IN GROUND WATER), MODELS ARE USED TO PREDICT CONCENTRATIONS. IN LIEU OF AN ESTABLISHED TREND IN HISTORICAL DATA INDICATING THE CONTRARY, THE EDM SITE WAS CONSIDERED TO BE IN STEADY-STATE WITH ITS SURROUNDINGS.

THE ONLY PATHWAY FOR WHICH MODELING WAS CONSIDERED APPROPRIATE WAS THE FUGITIVE DUST PATHWAY. RECEPTORS FOR THE SURFACE WATER AND SEDIMENT CONTACT PATHWAYS WERE EITHER EXPECTED TO BE PRESENT, ALTHOUGH INFREQUENTLY, IN THE AREA IN WHICH SAMPLES WERE TAKEN OR THE CONCENTRATIONS FOUND DURING THE RI WERE USED AS A DELIBERATELY CONSERVATIVE ESTIMATE OF POTENTIAL CONCENTRATIONS DOWNSTREAM. THUS, ALL EXPOSURES, EXCEPT VIA THE AIR PATHWAY, WERE EXPECTED TO BE REPRESENTED BY THE CONCENTRATIONS FOUND IN THE SAMPLES TAKEN ON THE SITE.

TO DESCRIBE THE AIR PATHWAY, AVERAGE AND MAXIMUM CONCENTRATIONS OF THE INDICATORS FOR WHICH THE FLUFF HAD BEEN ANALYZED WERE USED AS INPUT FOR A FUGITIVE DUST SCREENING MODEL. THE MODELS USED WERE EPA'S INDUSTRIAL SOURCE COMPLEX SHORT TERM (ISCST) AND INDUSTRIAL SOURCE COMPLEX LONG TERM (ISCLT) DISPERSION MODELS. THIS WAS A CONSERVATIVE APPROACH, AS THE AIRBORNE DUST PARTICLES ARE LIKELY TO CONTAIN MUCH LOWER LEVELS OF LEAD AND PCBs THAN THE LARGER SIZE PLASTIC FRACTION WHICH MAKES UP MOST OF THE PILE. ASSUMPTIONS WERE MADE REGARDING METEOROLOGICAL AND SITE CONDITIONS BASED ON ESTABLISHED SCREENING CRITERIA AND FIRST-HAND OBSERVATION OF SITE CONDITIONS.

EXPOSURES WERE ESTIMATED FOR THE MAXIMUM AND AVERAGE CONCENTRATIONS FOR EACH INDICATOR CHEMICAL IN EACH MEDIUM AT THE SITE. THE AIR SCREENING MODEL OUTPUT WAS USED TO DEVELOP SIMILAR DATA FOR THE AIR EXPOSURE POINTS. DIOXIN TOXICOLOGICAL EQUIVALENTS (DTES) WERE USED TO DESCRIBE THE DIOXIN CONTENT OF SOIL AND FLUFF. WHEN CALCULATING THE AVERAGE CONCENTRATION, HALF OF THE DETECTION LIMIT WAS USED AS THE CONCENTRATION IN A GIVEN SAMPLE FOR INDICATORS WHICH WERE NOT DETECTED IN THAT SAMPLE. FOR GROUND WATER, ONLY DOWNGRADIENT WELLS WERE USED FOR THE CALCULATIONS, I.E., UPGRADIENT WELL MW-1 WAS OMITTED FROM THE CALCULATIONS. THE MEASURED AND CALCULATED VALUES ARE PRESENTED IN TABLE 2. THE LEAD CONCENTRATIONS WERE OMITTED SINCE THESE INTAKES WERE CONSIDERED SEPARATELY DUE TO THE ABSENCE OF A REFERENCE DOSE (RFD). THE MAJOR ASSUMPTIONS ABOUT EXPOSURE FREQUENCY AND DURATION THAT WERE INCLUDED IN THE EXPOSURE ASSESSMENT ARE SHOWN ON TABLE 3.

#TAS

B. TOXICITY ASSESSMENT SUMMARY

THE TOXICITY EVALUATION OF THE INDICATOR CHEMICALS SELECTED FOR THE EDM SITE WAS CONDUCTED TO IDENTIFY RELEVANT CARCINOGENIC POTENCY SLOPES AND/OR CHRONIC REFERENCE DOSES AGAINST WHICH EXPOSURE POINT INTAKES COULD BE COMPARED IN THE RISK CHARACTERIZATION OF THE SITE. INDICATOR COMPOUNDS ARE THOSE WHICH ARE THE MOST TOXIC, PREVALENT, PERSISTENT,

MOBILE, AND WHICH CONTRIBUTE THE MAJOR POTENTIAL RISKS AT THE SITE. INDICATOR COMPOUNDS SELECTED FOR THIS SITE CLASSIFIED AS NONCARCINOGENS ARE LEAD, COPPER, ZINC, AND MANGANESE. POTENTIALLY CARCINOGENIC INDICATOR COMPOUNDS SELECTED FOR THIS SITE ARE PCBS, TRICHLOROETHYLENE, BIS(2-ETHYLHEXYL)PHTHALATE, AND POLYCHLORODIBENZO-P-DIOXIN. A SUMMARY OF TOXICOLOGICAL INFORMATION FOR THE INDICATOR CHEMICALS IS SHOWN IN TABLE 4. IMPORTANT FATE AND TRANSPORT PROCESSES FOR THE INDICATOR COMPOUNDS ARE SHOWN IN TABLE 5.

IN A CERCLA RISK ASSESSMENT, THE POTENTIAL EXPOSURE POINT CONCENTRATIONS ARE EXPRESSED ONLY IN TERMS OF THE INDICATOR COMPOUND CONCENTRATIONS DURING THE EXPOSURE ASSESSMENT. HOWEVER, A MORE COMPREHENSIVE AND CONSERVATIVE APPROACH IS TO USE THE CONCENTRATIONS OF SIMILAR COMPOUNDS TO REPRESENT THE EFFECT OF THE ENTIRE CHEMICAL GROUP, I.E., THE TOTAL MASS OF A CHEMICAL GROUP IS USED AS THE MASS OF THE INDICATOR COMPOUND REPRESENTING THAT GROUP. THIS CONSERVATIVE ASSUMPTION ALLOWS FOR EXPOSURES TO ENTIRE CHEMICAL FAMILIES TO BE INCORPORATED IN THE RISK CALCULATIONS. IN THE RISK ASSESSMENT, THIS APPROACH WAS CONSIDERED NECESSARY ONLY FOR DIOXINS BECAUSE OF THE HIGH TOXICITY ATTRIBUTED TO THIS GROUP OF COMPOUNDS. MULTIPLE RELATED COGENERS OF DIOXINS AND THE CHEMICALLY SIMILAR FURANS WERE GROUPED TOGETHER FOR EVALUATION. THE CONCENTRATION OF EACH ISOMER WAS MULTIPLIED BY A TOXICOLOGICAL EQUIVALENCY FACTOR (TEF) WHICH CONVERTS THE CONCENTRATION OF THE ISOMER TO A CONCENTRATION OF 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN (2,3,7,8-TCDD) THAT IS TOXICOLOGICALLY EQUIVALENT. THE TOTAL OF ALL THE CONCENTRATION-TEF PRODUCTS WAS THEN USED AS IF IT WERE THE CONCENTRATION OF 2,3,7,8-TCDD IN INTAKE AND CARCINOGENIC RISK CALCULATIONS.

CARCINOGENIC POTENCY SLOPES (CPSS) HAVE BEEN DEVELOPED BY EPA'S CARCINOGEN RISK ASSESSMENT VERIFICATION ENDEAVOR (CRAVE) FOR ESTIMATING EXCESS LIFETIME CANCER RISKS ASSOCIATED WITH EXPOSURE TO POTENTIALLY CARCINOGENIC CHEMICALS. CPSS, WHICH ARE EXPRESSED IN UNITS OF (MG/KG-DAY)⁻¹, ARE MULTIPLIED BY THE ESTIMATED INTAKE OF A POTENTIAL CARCINOGEN, IN MG/KG-DAY, TO PROVIDE AN UPPER-BOUND ESTIMATE OF THE EXCESS LIFETIME CANCER RISK ASSOCIATED WITH EXPOSURE AT THAT INTAKE LEVEL. THE TERM "UPPER BOUND" REFLECTS THE CONSERVATIVE ESTIMATE OF THE RISKS CALCULATED FROM THE CPS. USE OF THIS APPROACH MAKES UNDERESTIMATION OF THE ACTUAL CANCER RISK HIGHLY UNLIKELY. CANCER POTENCY SLOPES ARE DERIVED FROM THE RESULTS OF HUMAN EPIDEMIOLOGICAL STUDIES OR CHRONIC ANIMAL BIOASSAYS TO WHICH ANIMAL-TO-HUMAN EXTRAPOLATION AND UNCERTAINTY FACTORS HAVE BEEN APPLIED.

REFERENCE DOSES (RFDs) HAVE BEEN DEVELOPED BY EPA FOR INDICATING THE POTENTIAL FOR ADVERSE HEALTH EFFECTS FROM EXPOSURE TO CHEMICALS EXHIBITING NONCARCINOGENIC EFFECTS. RFDs, WHICH ARE EXPRESSED IN UNITS OF MG/KG-DAY, ARE ESTIMATES OF LIFETIME DAILY EXPOSURE LEVELS FOR HUMANS, INCLUDING SENSITIVE INDIVIDUALS THAT ARE LIKELY TO BE WITHOUT AN APPRECIABLE RISK OF ADVERSE HEALTH EFFECTS. ESTIMATED INTAKES OF CHEMICALS FROM ENVIRONMENTAL MEDIA (E.G., THE AMOUNT OF A CHEMICAL INGESTED FROM CONTAMINATED DRINKING WATER) CAN BE COMPARED TO THE RFD. RFDs ARE DERIVED FROM HUMAN EPIDEMIOLOGICAL STUDIES OR ANIMAL STUDIES TO WHICH UNCERTAINTY FACTORS HAVE BEEN APPLIED (E.G., TO ACCOUNT FOR THE USE OF ANIMAL DATA TO PREDICT EFFECTS ON HUMANS). THESE UNCERTAINTY FACTORS HELP ENSURE THAT THE RFDs WILL NOT UNDERESTIMATE THE POTENTIAL FOR ADVERSE NONCARCINOGENIC EFFECTS TO OCCUR.

#RCS

C. RISK CHARACTERIZATION SUMMARY

WHEN REVIEWING THE QUANTITATIVE INFORMATION PRESENTED IN THE TABLES IN THIS SECTION, THE FOLLOWING THRESHOLD LEVELS SHOULD BE USED. FOR NONCARCINOGENIC RISKS, A CHRONIC HAZARD INDEX VALUE ABOVE A VALUE OF 1.0 INDICATES THE POTENTIAL FOR AN ADVERSE HEALTH IMPACT. FOR THE CARCINOGENIC RISKS, A VALUE GREATER THAN 1E-04 TO 1E-06 IS GENERALLY RECOGNIZED AS INDICATING A RISK BEYOND THE ACCEPTABLE LEVEL.

1. NONCARCINOGENIC RISK

THE HAZARD INDEX (HI) METHOD IS USED FOR ASSESSING THE OVERALL POTENTIAL FOR NONCARCINOGENIC EFFECTS POSED BY THE INDICATOR COMPOUNDS. POTENTIAL CONCERN FOR NONCARCINOGENIC EFFECTS OF A SINGLE CONTAMINANT IN A SINGLE MEDIUM IS EXPRESSED AS THE HAZARD QUOTIENT (HQ) (OR THE RATIO OF THE ESTIMATED INTAKE DERIVED FROM THE CONTAMINANT CONCENTRATION IN A GIVEN MEDIUM TO THE CONTAMINANT'S REFERENCE DOSE). BY ADDING THE HQS FOR ALL CONTAMINANTS WITHIN A MEDIUM OR ACROSS ALL MEDIA TO WHICH A GIVEN POPULATION MAY REASONABLY BE EXPOSED, THE HI CAN BE GENERATED. THE HI PROVIDES A USEFUL REFERENCE POINT FOR GAUGING THE POTENTIAL SIGNIFICANCE OF MULTIPLE CONTAMINANT EXPOSURES WITHIN A SINGLE MEDIUM OR ACROSS MEDIA.

TABLES 6-8 PRESENT THE CALCULATED HAZARD INDICES FOR EACH AGE GROUP EVALUATED. THESE TABLES CALCULATE THE HAZARD INDICES ASSOCIATED WITH EACH OF THE EXPOSURE POINTS, EXPOSED POPULATIONS, AND ROUTES OF EXPOSURE IDENTIFIED PREVIOUSLY. MOST PROBABLE AND MAXIMUM HAZARD INDICES HAVE BEEN CALCULATED, USING THE MOST PROBABLE AND MAXIMUM INTAKES CALCULATED PREVIOUSLY. MOST PROBABLE INTAKES ARE CALCULATED USING AVERAGE EXPOSURE POINT CONCENTRATIONS OF THE INDICATOR CHEMICAL; MAXIMUM INTAKES ARE CALCULATED USING MAXIMUM EXPOSURE POINT CONCENTRATIONS. ALL OTHER EXPOSURE PARAMETERS ARE IDENTICAL IN THE CALCULATION OF THE TYPES OF INTAKES.

EXPOSURES TO MULTIPLE SOURCES OF CONTAMINATION THROUGH SEVERAL ROUTES OF EXPOSURE MAY OCCUR. THEREFORE, THE SUM OF ALL HAZARD INDICES FOR EACH SINGLE AGE GROUP AND EXPOSED POPULATION IS GIVEN. HAZARD INDICES WERE CALCULATED SEPARATELY FOR THE THREE AGE GROUPS. BOTH MOST PROBABLE AND MAXIMUM LIFETIME HAZARD INDICES WERE CALCULATED AND ARE PRESENTED IN TABLE 9.

MANGANESE IN THE GROUND WATER IS THE COMPOUND RESPONSIBLE FOR DRIVING THE HYPOTHETICAL DOWNGRADE WELL EXPOSURE POINT OVER THE HAZARD INDEX OF ONE. ONSITE WORKER EXPOSURE TO COPPER IN SURFACE SOILS ALSO EXCEEDS THE HAZARD INDEX OF ONE.

SINCE THE RFD FOR LEAD HAS BEEN WITHDRAWN, THE HAZARD OR RISK ASSOCIATED WITH LEAD COULD NOT BE ESTIMATED BY STANDARD RISK ASSESSMENT METHODS. FOR THIS REASON, ALTERNATE METHODS WERE CHOSEN AND LEAD WAS NOT INCLUDED ON THE TABLES SHOWING THE NONCARCINOGENIC HAZARD ESTIMATES FOR THE SITE. THE SUPERFUND REMOVAL ACTION LEVEL OF 15 PPB FOR LEAD WAS USED TO SCREEN SITE DATA FOR GROUND AND SURFACE WATER FOR EVIDENCE OF POTENTIAL HAZARD DUE TO LEAD. THE ACTION LEVEL WAS USED DIRECTLY AS A GUIDELINE TO ASSESS GROUND WATER AS A HYPOTHETICAL SOURCE OF DRINKING WATER WHILE IT WAS ADJUSTED FOR INTAKE VOLUME FOR THE SURFACE WATER INCIDENTAL INGESTION SCENARIO. SINCE THE STANDARD DRINKING WATER SCENARIO ASSUMES TWO LITERS OF WATER IS INGESTED DAILY BUT THE INCIDENTAL INGESTION SCENARIO ASSUMES ONLY 0.05 LITERS PER HOUR OF EXPOSURE, THE ACTION LEVEL WAS ADJUSTED BY THE RELATIVE VOLUME ASSOCIATED WITH EACH SPECIFIC EXPOSURE SCENARIO FOR INCIDENTAL INGESTION OF SURFACE WATER.

FOR SOIL AND FLUFF, THE POTENTIAL FOR HAZARD DUE TO LEAD WAS ASSESSED BY COMPARING DETECTED CONCENTRATIONS TO THE INTERIM GUIDELINES FOR SOIL LEAD CLEANUP LEVELS ESTABLISHED BY EPA (OSWER DIRECTIVE #9355.4-02). THE RANGE GIVEN IN THE REFERENCED GUIDANCE IS 500 TO 1000 PPM TOTAL LEAD FOR SOIL IN RESIDENTIAL AREAS. THE LEVEL OF 1000 PPM WAS USED FOR THIS SITE.

2. CARCINOGENIC RISK

FOR POTENTIAL CARCINOGENS, RISKS ARE ESTIMATED AS PROBABILITIES. EXCESS LIFETIME CANCER RISKS ARE DETERMINED BY MULTIPLYING THE INTAKE LEVEL WITH THE CANCER POTENCY SLOPE AND EXPRESSING THE RESULT IN SCIENTIFIC NOTATION. AN EXCESS LIFETIME CANCER RISK OF $1\text{E}-06$ INDICATES THAT, AS A PLAUSIBLE UPPER BOUND, AN INDIVIDUAL HAS A ONE IN ONE MILLION CHANCE OF DEVELOPING CANCER AS A RESULT OF SITE-RELATED EXPOSURE TO A CARCINOGEN

OVER A 70-YEAR LIFETIME UNDER THE SPECIFIC EXPOSURE CONDITIONS AT A SITE.

TABLES 10-12 PRESENT THE CALCULATED POTENTIAL CARCINOGENIC RISKS FOR EACH AGE GROUP OF THE POTENTIALLY EXPOSED POPULATIONS. BOTH MOST PROBABLE AND MAXIMUM CARCINOGENIC RISKS (USING MOST PROBABLE AND MAXIMUM INTAKES) HAVE BEEN CALCULATED FOR EACH CARCINOGEN FOUND AT THE IDENTIFIED POINTS OF EXPOSURE.

THE INDICATORS RESPONSIBLE FOR THE POTENTIAL RISK LEVELS ASSOCIATED WITH THE FLUFF AND THE ONSITE SOIL ARE PCBS AND DIOXIN. PCBS MAY BE BOUND WITHIN THE FLUFF MATERIALS, AND THEREFORE, THEIR BIOAVAILABILITY MAY BE LIMITED. THE ASSUMPTIONS IN THE INTAKE CALCULATIONS, HOWEVER, ASSUME A BIOAVAILABILITY EQUAL TO THAT FOUND WITH SIMILAR COMPOUNDS IN SOIL.

THE INDICATOR RESPONSIBLE FOR THE RISK ASSOCIATED WITH THE HYPOTHETICAL SCENARIO FOR RESIDENTIAL USE OF GROUND WATER IS TRICHLOROETHYLENE, WHICH MAY BE INGESTED AND ALSO VOLATILIZED DURING BATHING AND SUBSEQUENTLY INHALED.

TOTAL MAXIMUM AND MOST PROBABLE CASE RISKS ASSOCIATED WITH ACTUAL AND HYPOTHETICALLY APPLICABLE EXPOSURE POINTS WERE CALCULATED. THESE TOTAL WORST CASE AND MOST PROBABLE CASE RISKS ARE SHOWN IN TABLES 10-12. LIFETIME ESTIMATES OF RISK ARE PRESENTED IN TABLE 13. THESE HAVE BEEN CALCULATED FOR OFFSITE RESIDENTS, FOLLOWING THE SAME PROCEDURE USED TO CALCULATE LIFETIME HAZARD INDICES.

3. ENVIRONMENTAL RISK

THE MAJOR ECOSYSTEM OF THE EDM SITE AND SURROUNDING RIDGES IS THE EASTERN DECIDUOUS FOREST. THE WETLAND COMMUNITY IS LIMITED TO THE SMALL FLOOD PLAIN OF THE INTERMITTENT STREAM AND THE LSR AND SEVERAL SMALL EMERGENT WETLANDS. ALL OF THESE WETLAND AREAS, EXCEPT ONE SMALL EMERGENT WETLAND, ARE LOCATED OUTSIDE OF THE FENCED SITE AREA. NO RARE OR ENDANGERED SPECIES HAVE BEEN REPORTED OR OBSERVED ON OR NEAR THE SITE. ALTHOUGH AN INTENSIVE ECOLOGICAL RISK ASSESSMENT WAS NOT CONDUCTED, SOME INDICATION OF POTENTIAL RISK TO WILDLIFE AND THE ENVIRONMENT CAN BE ASSESSED FROM THE TOXICITY TESTING (BIOASSAYS), FIELD ASSESSMENT, AND HUMAN HEALTH RISK ANALYSIS AND SITE CONDITIONS.

THE LACK OF SUITABLE HABITAT ON OR NEAR THE SITE AND THE SITE FENCE DISCOURAGES WILDLIFE UTILIZATION OF THE SITE. LARGE MAMMALS ARE PREVENTED FROM EASILY ENTERING THE SITE DUE TO THE FENCE. SMALL ANIMALS, BIRDS, AND SOIL INVERTEBRATES ARE LIMITED DUE TO LACK OF HABITAT.

THE INTERMITTENT STREAM, MOST LIKELY DUE TO ELEVATED CONTAMINANT LEVELS, HAS LIMITED ABILITY TO SUPPORT AQUATIC LIFE. DIRECT DISCHARGE OF CONTAMINATED OVERBURDEN GROUND WATER AND CONTAMINATED SEEPS INTO THE INTERMITTENT STREAM HAVE RESULTED IN CONTAMINATED SEDIMENTS AND SURFACE WATER IN THE STREAM. FEDERAL AND STATE SURFACE WATER STANDARDS ARE EXCEEDED FOR COPPER, LEAD, ZINC, MANGANESE, AND IRON IN THIS STREAM. THE RESULTS OF THE INTERMITTENT STREAM BIOASSAYS INDICATE POSSIBLE SITE-RELATED TOXICITY TO AQUATIC LIFE IN THE INTERMITTENT STREAM DUE TO METALS.

THE LITTLE SCHUYLKILL RIVER DOES NOT SUPPORT RESIDENT AQUATIC LIFE FOR APPROXIMATELY 5 MILES DOWNSTREAM DUE TO ITS ACID MINE DEGRADED CONDITION. TRANSPORT OF SEDIMENT DOES NOT SEEM TO HAVE A SIGNIFICANT EFFECT ON METALS CONCENTRATIONS BECAUSE SEDIMENT SAMPLES COLLECTED FROM THE LITTLE SCHUYLKILL RIVER BOTH UPSTREAM AND DOWNSTREAM OF THE TRIBUTARY, DID NOT SIGNIFICANTLY DIFFER FOR METALS.

#SSU

D. SIGNIFICANT SOURCES OF UNCERTAINTY

DISCUSSION OF GENERAL LIMITATIONS INHERENT IN THE RISK ASSESSMENT

PROCESS AS WELL AS THE UNCERTAINTY RELATED TO SOME OF THE MAJOR ASSUMPTIONS MADE IN THIS ASSESSMENT ARE INCLUDED BELOW.

1. THE RISK ASSESSMENT IS BASED UPON THE DATA COLLECTED DURING THE RI AND USES RI SAMPLING RESULTS AND PREDICTIVE MODELING TO REPRESENT ENVIRONMENTAL CONCENTRATIONS OVER LARGE AREAS. THIS EXTRAPOLATION CONTRIBUTES TO THE UNCERTAINTY OF THE RISK ASSESSMENT. ALSO, AIR AND EMISSIONS MODELING IS USED RATHER THAN ACTUAL SAMPLING TO PREDICT THE EXPOSURE CONCENTRATIONS DUE TO FUGITIVE DUST EMISSIONS FROM THE SITE.

2. THE POTENTIAL HUMAN EXPOSURE TO GROUND WATER IS PROBABLY NOT VERY SUBSTANTIAL. NO EXISTING GROUND WATER USERS ARE PRESENT IN AREAS HYDRAULICALLY DOWNGRADIENT OF THE SITE. ALSO, NO DOWNSTREAM USE OF THE LITTLE SCHUYLKILL RIVER WATER (WHICH IS THE DISCHARGE POINT FOR GROUND WATER FROM THE SITE) FOR RESIDENTIAL WATER SUPPLIES HAS BEEN IDENTIFIED IN THE VICINITY OF THE SITE AT THIS TIME. HOWEVER, AQUATIC LIFE IS EXPOSED TO CONTAMINATED GROUND WATER VIA DIRECT DISCHARGE AND SEEPAGE TO THE INTERMITTENT STREAM.

3. THE ONSITE EXPOSURES FOR CHILDREN AGES 6-12 ARE BASED ON THE ASSUMPTIONS THAT THE FENCE AROUND THE SITE IS NOT IN PLACE AND THAT NO REMEDIATION HAS OCCURRED.

4. LEAD, PHTHALATES, AND PCBS MAY BE CHEMICALLY BOUND IN THE PLASTIC MATRIX OF THE FLUFF AND, THEREFORE, FLUFF (AND SOIL) MAY NOT BE AS BIOAVAILABLE AS ASSUMED IN THE RISK ASSESSMENT.

5. DUE TO THE LIMITATIONS OF THE RISK ASSESSMENT PROCESS ITSELF AND TO CONSERVATIVE ASSUMPTIONS MADE SPECIFIC TO THE EDM SITE, THE RISK LEVELS CALCULATED ARE CONSIDERED TO BE ESTIMATES OF WORST-CASE RISK.

6. THE CPSS AND REFERENCE DOSES CONTAIN UNCERTAINTIES RESULTING FROM EXTRAPOLATING FROM HIGH TO LOW DOSES AND FROM ANIMALS TO HUMANS. PROTECTIVE ASSUMPTIONS WERE MADE TO COVER THESE UNCERTAINTIES.

#RAC

E. RISK ASSESSMENT CONCLUSIONS

EXPOSURE OF ADULT ONSITE MAINTENANCE WORKERS TO COPPER IN THE SURFACE SOIL AND EXPOSURE TO A HYPOTHETICAL DOWNGRADIENT WELL (ON THE SITE OR STATE GAME LANDS) FOR ALL AGE GROUPS WERE SIGNIFICANT NONCARCINOGENIC HAZARDS FOR INDIVIDUAL PATHWAYS AND POPULATIONS AT THE SITE. THE MAXIMUM NONCARCINOGENIC HAZARD INDEX FOR ACTUAL EXPOSURES FOR CHILDREN AGE 2-6 WAS ALSO GREATER THAN ONE.

EXPOSURE TO THE FLUFF AND ONSITE SURFACE SOIL BY ONSITE MAINTENANCE WORKERS, AND (FOR FLUFF ONLY) CHILDREN AGE 6-12 TRESPASSING ON THE EDM SITE PRESENTED SIGNIFICANT CARCINOGENIC RISKS GREATER THAN $1\text{E-}04$. THE POTENTIAL RISKS ASSOCIATED WITH THESE EXPOSURES ARE RELATED TO PCBS AND DIOXIN IN FLUFF MATERIAL AND SITE SOILS.

RESIDENTIAL USE OF GROUND WATER FROM A HYPOTHETICAL WELL LOCATED DOWNGRADIENT OF THE SITE PRESENTED EXCEEDED $1\text{E-}04$ FOR MAXIMUM ESTIMATES OF CARCINOGENIC RISK. THE RISK IS DRIVEN BY THE PRESENCE OF TRICHLOROETHYLENE IN THE GROUND WATER.

THE ESTIMATED "MOST PROBABLE" LIFETIME CARCINOGENIC RISK FOR OFFSITE RESIDENTS IS ABOVE THE POTENTIALLY ACCEPTABLE RANGE. UNDER THE "MAXIMUM" LIFETIME CARCINOGENIC RISK SCENARIO, THE RISK TO OFFSITE RESIDENTS ALSO EXCEEDS $1\text{E-}04$.

THE INTERMITTENT STREAM, MOST LIKELY DUE TO ELEVATED CONTAMINANT LEVELS, HAS LIMITED ABILITY TO SUPPORT AQUATIC LIFE. DIRECT DISCHARGE OF CONTAMINATED OVERBURDEN GROUND WATER AND CONTAMINATED SEEPS INTO THE INTERMITTENT STREAM HAVE RESULTED IN CONTAMINATED SEDIMENTS AND SURFACE WATER IN THE STREAM. THE RESULTS OF THE INTERMITTENT STREAM BIOASSAYS

INDICATE POSSIBLE SITE-RELATED TOXICITY TO AQUATIC LIFE IN THE INTERMITTENT STREAM DUE TO METALS. FEDERAL AND STATE SURFACE WATER STANDARDS ARE EXCEEDED FOR COPPER, LEAD, ZINC, MANGANESE, AND IRON. DUE TO ACID MINE DEGRADATION IN THE LITTLE SCHUYLKILL RIVER, IT IS EXTREMELY DIFFICULT TO MEASURE SITE IMPACTS ON THAT RIVER.

ACTUAL OR THREATENED RELEASES OF HAZARDOUS SUBSTANCES FROM THIS SITE, IF NOT ADDRESSED BY IMPLEMENTING THE RESPONSE ACTION SELECTED IN THIS ROD, MAY PRESENT AN IMMINENT AND SUBSTANTIAL ENDANGERMENT TO PUBLIC HEALTH, WELFARE, OR THE ENVIRONMENT.

#DA

VIII. DESCRIPTION OF ALTERNATIVES

IN ACCORDANCE WITH 40 CFR S 300.430, A LIST OF REMEDIAL RESPONSE ACTIONS AND REPRESENTATIVE TECHNOLOGIES WERE IDENTIFIED AND SCREENED TO MEET THE REMEDIAL ACTION OBJECTIVES AT THE SITE. THE TECHNOLOGIES THAT PASSED THE SCREENING WERE ASSEMBLED TO FORM REMEDIAL ALTERNATIVES. THE FS EVALUATED A VARIETY OF TECHNOLOGIES USED IN THE DEVELOPMENT OF ALTERNATIVES FOR ADDRESSING THE CONTAMINATED FLUFF, SEDIMENTS, SOILS, AND GROUND WATER. UPON FURTHER ANALYSIS, THE TECHNOLOGIES AND APPROACHES CONTAINED IN THE FOLLOWING ALTERNATIVES WERE DETERMINED TO BE THE MOST APPLICABLE FOR OU1 AND OU2 AT THIS SITE.

REMEDIAL ACTION ALTERNATIVE 1 - NO ACTION

THE NATIONAL CONTINGENCY PLAN (NCP) REQUIRES THAT EPA CONSIDER A "NO ACTION" ALTERNATIVE FOR EVERY SITE TO ESTABLISH A BASELINE FOR COMPARISON TO ALTERNATIVES THAT DO REQUIRE ACTION. THE NO ACTION ALTERNATIVE CONSISTS OF TAKING NO REMEDIAL ACTION TO CLEANUP CONTAMINATION OR TO ADDRESS RISKS POSED BY THE SITE. THE EXISTING SHALLOW GROUND WATER COLLECTION AND TREATMENT SYSTEM WOULD CEASE OPERATION AND THE EXISTING SURFACE WATER DIVERSION DITCH SYSTEM AND THE FENCE SURROUNDING THE SITE WOULD CEASE TO BE MAINTAINED.

THIS ALTERNATIVE WOULD PRESENT A THREAT TO HUMAN HEALTH AND THE ENVIRONMENT AT THE SITE BECAUSE IT DOES NOT MEET THE ARARS DISCUSSED BELOW AND WOULD NOT MEET THE REMEDIAL OBJECTIVE OF CLEANING UP CONTAMINATED ONSITE AREAS AND REDUCING THE TOXICITY, MOBILITY, AND VOLUME OF CONTAMINANTS. THIS ALTERNATIVE SERVES ONLY AS A BASELINE FOR COMPARISON TO OTHER ALTERNATIVES.

CAPITAL COST:	\$ 0
ANNUAL O&M, PRESENT WORTH:	\$ 0
TOTAL COST:	\$ 0

REMEDIAL ACTION ALTERNATIVE NO. 2 - LIMITED ACTION

THIS ALTERNATIVE PROVIDES FOR CONTINUED SHALLOW GROUND WATER COLLECTION USING THE EXISTING INTERCEPTOR TRENCHES, CONTINUED TREATMENT AT THE EXISTING WASTE WATER TREATMENT FACILITY, AND CONTINUED MAINTENANCE OF THE EQUALIZATION LAGOON, SURFACE WATER DIVERSION DITCHES, AND EXISTING FENCE. SITE INSPECTIONS, SURFACE WATER, AND GROUND WATER MONITORING WOULD ALSO BE CONDUCTED ON A SEMI-ANNUAL BASIS. THE MONITORING PROGRAM WOULD CONSIST OF SAMPLING APPROXIMATELY 10 EXISTING MONITORING WELLS AND FOUR SURFACE WATER SAMPLES AT SEEP LOCATIONS FOR HALOGENATED HYDROCARBONS, PHENOLICS, AND SELECT METALS (PB, CU, AL, MN, FE, AND ZN) WITH APPROPRIATE QUALITY ASSURANCE PROTOCOL.

REMEDIATION OF THE HOTSPOT FLUFF AND SOIL AREAS, METALS CONTAMINATED SOILS AND SEDIMENTS, AND MISCELLANEOUS DEBRIS IS NOT ADDRESSED WITH THIS ALTERNATIVE. ADDITIONALLY, THE SHALLOW GROUND WATER, SOME OF WHICH CURRENTLY UNDERFLOWS THE EXISTING GROUND WATER INTERCEPTOR TRENCH SYSTEM AND ENTERS THE DEEPER AQUIFER AND INTERMITTENT STREAM VIA SEEPS AND NORMAL DISCHARGE, WOULD NOT BE ADDRESSED. DEEP GROUND WATER ALSO WOULD NOT BE ADDRESSED.

THE LIMITED ACTION ALTERNATIVE WOULD PROVIDE NO REMEDIATION OF THE CONTAMINATED MEDIA AT THE SITE AND, THEREFORE, WOULD NOT MEET THE POTENTIAL CHEMICAL-SPECIFIC ARARS DISCUSSED BELOW. THERE WOULD BE NO POTENTIAL LOCATION-SPECIFIC OR ACTION-SPECIFIC ARARS APPLICABLE TO THIS ALTERNATIVE.

THIS ALTERNATIVE DOES NOT MEET THE REMEDIAL OBJECTIVES FOR THE SITE. IT IS NOT PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT. THERE IS NO LONG-TERM EFFECTIVENESS BECAUSE WASTES REMAIN ONSITE AND EXPOSED. ALTHOUGH THE EXISTING TRENCH SYSTEM COLLECTS AND TREATS SOME SHALLOW GROUND WATER, THERE IS AN INSUFFICIENT REDUCTION IN TOXICITY, MOBILITY, AND VOLUME FOR GROUND WATER AND OTHER MEDIA. STATE AND COMMUNITY ACCEPTANCE OF THIS ALTERNATIVE WOULD BE VERY UNLIKELY.

CAPITAL COST:	\$ 0
ANNUAL O&M, PRESENT WORTH:	\$ 966,000
TOTAL COST:	\$ 966,000

REMEDIAL ACTION ALTERNATIVE 3 - INCINERATION OF HOTSPOTS, STABILIZATION, DISPOSAL OR CONSOLIDATION, PLUS LIMITED ACTION

IN ADDITION TO THE LIMITED ACTION (ALTERNATIVE 2) ACTIVITIES, ALTERNATIVE 3 PROVIDES FOR TREATMENT AND DISPOSAL OF APPROXIMATELY 5,600 CUBIC YARDS OF HOTSPOT FLUFF AND SOILS, 600 CUBIC YARDS OF METALS CONTAMINATED SEDIMENTS AND SOILS, AND 14,000 CUBIC YARDS OF MISCELLANEOUS DEBRIS AS FOLLOWS:

- * EXCAVATE AND INCINERATE, EITHER ONSITE OR OFFSITE, DIOXIN CONTAMINATED FLUFF EXCEEDING THE TARGET LEVEL. THE TARGET LEVEL FOR DIOXIN WILL BE EITHER 20 UG/KG OR A LEVEL AS DETERMINED BY A RECOGNIZED FATE AND TRANSPORT MODEL, WHICHEVER IS LOWER. THE ESTIMATED VOLUME OF DIOXIN CONTAMINATED FLUFF IS 500 CUBIC YARDS.
- * EXCAVATE AND INCINERATE, EITHER ONSITE OR OFFSITE, PCB CONTAMINATED FLUFF AND SOILS IN EXCESS OF THE TARGET LEVEL. THE TARGET LEVEL FOR PCB CONTAMINATED FLUFF AND SOILS WILL BE EITHER 25 MG/KG OR A LEVEL AS DETERMINED BY A RECOGNIZED FATE AND TRANSPORT MODEL, WHICHEVER IS LOWER. THE ESTIMATED VOLUME OF PCB CONTAMINATED FLUFF AND SOIL IS 5,160 CUBIC YARDS.
- * REMOVE THE LEAD CONTAMINATED SOILS IN THE DRAINAGE DITCHES ABOVE TARGET LEVELS. THE TARGET LEVEL FOR LEAD CONTAMINATED SOILS WILL BE EITHER 1,000 MG/KG OR A LEVEL AS DETERMINED BY A RECOGNIZED FATE AND TRANSPORT MODEL, WHICHEVER IS LOWER. THE ESTIMATED VOLUME OF LEAD CONTAMINATED SOILS IS 480 CUBIC YARDS.
- * REMOVE THE METALS CONTAMINATED SAND/SILT/CLAY SIZE STREAM SEDIMENTS ABOVE TARGET LEVELS. TARGET LEVELS WILL BE DETERMINED BY A RECOGNIZED FATE AND TRANSPORT MODEL. THE ESTIMATED VOLUME OF METALS CONTAMINATED SEDIMENTS IS 120 CUBIC YARDS.
- * RUN THE EP TOXICITY TEST, OR ANOTHER APPROPRIATE TOXICITY TEST AS DETERMINED DURING RD/RA, ON THE INCINERATOR RESIDUALS AND MISCELLANEOUS DEBRIS. IF SOILS AND SEDIMENTS WILL BE DISPOSED OFFSITE RATHER THAN CONSOLIDATED WITH THE REMAINDER OF THE FLUFF PILE ONSITE, THEN ALSO TEST THESE MEDIA.
- * IF INCINERATOR RESIDUALS PASS THE TOXICITY TEST, THEN EITHER DISPOSE IN AN OFFSITE MUNICIPAL LANDFILL OR CONSOLIDATE WITH THE REMAINDER OF THE FLUFF PILE ONSITE. IF THE RESIDUALS FAIL THE TOXICITY TEST, THEN TREAT

THROUGH STABILIZATION TO A LEVEL WHICH REMOVES THE CHARACTERISTIC BY WHICH THEY FAILED, THEN EITHER DISPOSE IN AN OFFSITE MUNICIPAL LANDFILL OR CONSOLIDATE WITH THE REMAINDER OF THE FLUFF PILE ONSITE.

- * IF SOILS AND/OR SEDIMENTS PASS THE TOXICITY TEST, THEN DISPOSE IN AN OFFSITE MUNICIPAL LANDFILL. IF SOILS AND/OR SEDIMENTS FAIL THE TOXICITY TEST, THEN TREAT THROUGH STABILIZATION TO A LEVEL WHICH REMOVES THE CHARACTERISTIC BY WHICH THEY FAILED AND DISPOSE IN AN OFFSITE MUNICIPAL LANDFILL.
- * IF THE MISCELLANEOUS DEBRIS PASSES THE TOXICITY TEST, THEN DISPOSE IN AN OFFSITE MUNICIPAL LANDFILL. IF THE MISCELLANEOUS DEBRIS FAILS THE TEST, THEN DISPOSE IN A RCRA LANDFILL UNIT WHICH MEETS THE STATUTORY AND REGULATORY REQUIREMENTS SET FORTH BELOW.
- * UPGRADE SURFACE WATER RUNON/RUNOFF CONTROLS.
- * COLLECT AND CONSOLIDATE THE ONSITE SCATTERED FLUFF WITH THE MAIN FLUFF PILE.
- * UPGRADE THE EXISTING SITE FENCE AND CONTINUE SITE MAINTENANCE AND MONITORING.

ALTHOUGH MANY OTHER REMEDIAL OPTIONS WERE EVALUATED DURING THE INITIAL SCREENING OF TECHNOLOGIES IN THE FS AS SHOWN IN TABLE 14, INCINERATION OF THE HOTSPOT AREAS WAS DETERMINED TO BE THE BEST TREATMENT OPTION FOR THESE MEDIA BECAUSE IT WOULD DESTROY THE GREATEST AMOUNT OF ORGANIC CONSTITUENTS (PHthalATES, PCBS, AND DIOXIN) IN THE FLUFF AND SOILS. ADDITIONALLY, INCINERATION WOULD NOT ONLY REDUCE THE VOLUME OF CONTAMINATED MEDIA BY 80 PERCENT, BUT WOULD ALSO ELIMINATE ITS MOBILITY.

THE INCINERATOR WOULD HAVE TO MEET ALL HAZARDOUS WASTE (RCRA) AND PCB (TSCA) PERFORMANCE STANDARDS. DUE TO THE PRESENCE OF DIOXINS AND PCBS, THE INCINERATOR WOULD BE REQUIRED TO ACHIEVE 99.9999 PERCENT DESTRUCTION OF ALL ORGANIC HAZARDOUS CONSTITUENTS PURSUANT TO 40 CFR S 264.343(A)(2). DURING THE REMEDIAL DESIGN/REMEDIAL ACTION (RD/RA) PHASE, A TEST BURN OF THE FLUFF AND OTHER TREATABILITY STUDIES AS NECESSARY WOULD BE PERFORMED TO DETERMINE OPTIMAL INCINERATOR OPERATING CONDITIONS AND TO QUANTIFY EMISSIONS FOR CONTROL DEVICE SELECTION AND RISK ANALYSIS. THROUGHOUT ACTUAL OPERATION, INCINERATOR FEED RATES AND OPERATING CONDITIONS MUST BE CONTINUOUSLY MONITORED AND CONTROLLED TO ENSURE COMPLIANCE WITH THE PERFORMANCE STANDARDS. INCINERATOR EMISSION ESTIMATES WOULD ALSO HAVE TO BE EVALUATED TO ENSURE THAT THEY WOULD NOT ADVERSELY AFFECT ATTAINMENT OF ANY NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS) PROMULGATED UNDER THE CLEAN AIR ACT, PARTICULARLY THE NAAQS FOR LEAD, 40 CFR PART 50, APPENDIX G.

AN ONSITE MOBILE INCINERATOR WOULD BE THE MOST PRACTICAL INCINERATOR CHOICE BECAUSE OF THE AVAILABILITY OF MOBILE UNITS AND THE FACT THAT THE CONTAMINATED MEDIA WOULD NOT NEED TO BE MOVED OFFSITE FOR TREATMENT. APPROXIMATELY ONE YEAR WOULD BE REQUIRED TO RETAIN A MOBILE INCINERATOR FOR THE SITE. EPA'S CURRENT BEST ESTIMATE OF INCINERATION TIME FOR THE HOTSPOT AREAS IS 288 DAYS. THIS ESTIMATE WILL BE REFINED DURING RD/RA.

OFFSITE INCINERATION FACILITIES WOULD MOST LIKELY BE UNAVAILABLE BECAUSE NO FACILITIES ARE CURRENTLY PERMITTED TO ACCEPT DIOXIN CONTAMINATED WASTE AND MOST WILL NOT BURN A WASTE WITH THE LEAD CONCENTRATIONS WHICH ARE PRESENT IN THE FLUFF. HOWEVER, THIS COULD CHANGE BY THE TIME THE REMEDY IS READY TO BE IMPLEMENTED.

BECAUSE THE PLASTIC FLUFF PRIMARILY CONSISTS OF OXIDIZABLE ORGANIC CONSTITUENTS, THE QUANTITY BY WEIGHT OF ASH AFTER INCINERATION IS ESTIMATED TO BE APPROXIMATELY 20 PERCENT OF THE ORIGINAL FEED. THE ASH REMAINING AFTER INCINERATION OF SOIL IS ESTIMATED TO BE APPROXIMATELY 70

PERCENT OF THE ORIGINAL SOIL WEIGHT. FOR THE PURPOSES OF THIS ROD, 1,342 CUBIC YARDS OF INCINERATOR ASH ARE ESTIMATED. A MORE ACCURATE ESTIMATE OF THE ASH QUANTITY WILL BE DETERMINED DURING A PILOT TEST BURN.

STABILIZATION IS AN EFFECTIVE AND PROVEN TECHNOLOGY FOR IMMOBILIZING CONTAMINANTS SUCH AS THE METALS WHICH WILL REMAIN IN THE ASH AND RESIDUALS AFTER INCINERATION. IF THESE RESIDUALS FAIL THE EP TOXICITY OR OTHER APPROPRIATE TOXICITY TEST AS DETERMINED DURING RD/RA, THE RESIDUALS WILL BE STABILIZED WITH A CEMENTITIOUS OR POZZOLANIC REAGENT MIXTURE WHICH WILL INCREASE THE RESIDUAL VOLUME TO APPROXIMATELY 1,610 CUBIC YARDS.

THE METALS CONTAMINATED SOILS AND SEDIMENTS WOULD HAVE TO UNDERGO TOXICITY TESTING IF THEY WILL BE DISPOSED OFFSITE. AFTER EITHER PASSING THE TEST WITHOUT TREATMENT, OR BEING STABILIZED TO A POINT AT WHICH THEY PASS THE TEST, THE SOILS AND/OR SEDIMENTS WOULD BE DISPOSED IN AN OFFSITE MUNICIPAL LANDFILL.

THE MISCELLANEOUS DEBRIS WOULD UNDERGO TOXICITY TESTING AND, IF IT PASSES THE TEST, THEN IT WILL BE DISPOSED IN AN OFFSITE MUNICIPAL LANDFILL. IF THE DEBRIS FAILS THE TEST, THEN IT WILL BE DISPOSED IN A RCRA LANDFILL UNIT WHICH MEETS MINIMUM TECHNOLOGY REQUIREMENTS (MTRS). THE SMALL FLUFF PILE LOCATED OFFSITE TO THE SOUTH, IDENTIFIED AS W1-16 ON FIGURE 10, IS CONSIDERED MISCELLANEOUS DEBRIS. OFFSITE DEBRIS DISPOSAL WOULD NEED TO BE ACCOMPLISHED PRIOR TO MAY 8, 1992 IN ORDER TO MEET THE REQUIREMENTS OF THE NATIONAL CAPACITY VARIANCE.

IF AN ONSITE CONTAINMENT REMEDY IS SELECTED FOR OU3 - THE REMAINDER OF THE FLUFF PILE - THEN TREATED/UNTREATED (DEPENDING ON THE RESULTS OF TOXICITY TESTING) INCINERATOR RESIDUALS, AND UNTREATED SEDIMENTS, SOILS, AND DEBRIS WOULD BE CONSOLIDATED ONSITE WITH THE REMAINDER OF THE FLUFF PILE RATHER THAN BEING DISPOSED OFFSITE. IN THIS CASE, IT WOULD BE UNNECESSARY TO PERFORM TOXICITY TESTING ON THE SOILS, SEDIMENTS, AND DEBRIS.

ALTHOUGH THE SMALL ONSITE EMERGENT WETLAND IS NOT IN THE DIRECT PATH OF PROPOSED EXCAVATION ACTIVITIES, CARE WOULD NEED TO BE TAKEN WHEN CONDUCTING ANY CONSTRUCTION/EXCAVATION ACTIVITIES NEAR THIS AREA. CARE WOULD ALSO NEED TO BE EXERCISED WHEN EXCAVATING SEDIMENTS FROM THE INTERMITTENT STREAM SO AS TO NOT UNNECESSARILY DISTURB SURROUNDING WETLANDS AREAS.

UPGRADING THE SURFACE WATER RUNON/RUNOFF CONTROLS MAY INCLUDE DEEPENING DIVERSION DITCHES, FORTIFYING BERMS, AND PROVIDING ADDITIONAL PUMPING FACILITIES AND PIPING - AS DESCRIBED WITH REGARD TO THE WASTE WATER TREATMENT FACILITY ABOVE - TO INSURE THAT ALL RUNOFF IS DELIVERED TO THE WASTE WATER TREATMENT FACILITY.

ARARS

MAJOR ARARS UNDER THIS ALTERNATIVE INCLUDE:

CHEMICAL-SPECIFIC ARARS

- (A) RCRA SUBTITLE C, 40 CFR PART 261 AND PA CODE, CHAPTER 261 FOR IDENTIFICATION OF CHARACTERISTIC HAZARDOUS WASTES;
- (B) THE NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS) SET FORTH AT 40 CFR PART 50;
- (C) THE PENNSYLVANIA AIR POLLUTION CONTROL ACT, TITLE 25, PA CODE CHAPTER 127;
- (D) THE PENNSYLVANIA ARAR FOR GROUND WATER FOR HAZARDOUS SUBSTANCES, WHICH IS THAT ALL GROUND WATER MUST BE REMEDIATED TO BACKGROUND QUALITY AS SPECIFIED BY 25 PA CODE SECTIONS 264.90 - 264.100, AND IN PARTICULAR, BY 25

PA CODE SECTIONS 264.97(I), (J), AND 264.100(A)(9).

- (E) 40 CFR PART 761.125, WHICH REQUIRES REMOVAL OF CONTAMINATED SOILS TO 25 MG/KG IN AREAS OF RESTRICTED PUBLIC USE UNDER THE TOXIC SUBSTANCES AND CONTROL ACT (TSCA). IF FATE AND TRANSPORT MODELING SHOWS THAT A LOWER VALUE IS MORE APPROPRIATE, THAT VALUE WILL BE USED.

ACTION-SPECIFIC ARARS

- (F) IF WASTE IS TO BE CONVEYED OFFSITE TO A LANDFILL, THEN RCRA AND DEPARTMENT OF TRANSPORTATION REGULATIONS GOVERNING THE TRANSPORTATION OF HAZARDOUS WASTES, 40 CFR PARTS 262 AND 263, AND 40 CFR PARTS 107 AND 171-179, RESPECTIVELY;
- (G) LDRS FOR DISPOSAL OF INCINERATOR RESIDUALS AND FOR DISPOSAL OF SEDIMENTS, SOILS, AND DEBRIS IF THESE ARE DISPOSED OFFSITE, AS PROVIDED IN 40 CFR PART 268;
- (H) PA CODE, TITLE 25, CHAPTER 264, SUBCHAPTER O - PENNSYLVANIA REGULATIONS FOR HAZARDOUS WASTE INCINERATION.
- (I) THE EPA TSCA REGULATIONS FOR INCINERATION OF PCB MATERIALS, 40 CFR S 761.70;
- (J) RCRA INCINERATION STANDARDS SET FORTH AT 40 CFR PART 264, SUBPART O, EXCEPT TO THE EXTENT FEDERAL REGULATIONS PROVIDE MORE STRINGENT STANDARDS;
- (K) IF THE WASTES ARE NONHAZARDOUS, THEN ONSITE LANDFILLING MUST COMPLY WITH RCRA LANDFILL STANDARDS, 40 CFR PART 264, SUBPART N;
- (L) IF THE WASTES ARE FIXATED USING A CEMENT OR POZZOLAN-BASED PROCESS, OR ANOTHER SIMILAR FIXATION PROCESS THAT PROVIDES EQUIVALENT PROTECTION, EPA WILL REQUIRE COMPLIANCE WITH RCRA STANDARDS FOR MISCELLANEOUS TREATMENT UNITS, 40 CFR PART 264, SUBPART X, AND THE OPERATION, MOBILIZATION AND CLOSURE REQUIREMENTS SET FORTH AT 40 CFR SS 264.600, ET SEQ.
- (M) OSHA STANDARDS FOR WORKER'S PROTECTION, 29 CFR PARTS 1904, 1910, AND 1926;
- (N) RCRA LANDFILL STANDARDS, 40 CFR PART 264, SUBPART N, AND PA CODE TITLE 25, CHAPTERS 271, 273, 275, 277, 279, 281, 283, AND 285, WHICH REGULATE SOLID WASTE LANDFILLS, SHOULD EPA SELECT OFFSITE DISPOSAL OF NONHAZARDOUS MATERIALS;
- (O) RCRA REQUIREMENTS FOR FIXATION OF ASH RESIDUES, IF NECESSARY, 40 CFR PART 264, SUBPART X;

LOCATION-SPECIFIC ARARS

- (P) PA CODE, TITLE 25, CHAPTER 102, WHICH PERTAINS TO EROSION CONTROL REQUIREMENTS RELATED TO EXCAVATION ACTIVITIES.
- (Q) THE NATIONAL CAPACITY VARIANCE FOR OFFSITE DEBRIS DISPOSAL, IF IT IS DETERMINED TO BE HAZARDOUS, 40 CFR PART 268, APPENDIX VIII (THERE IS A RCRA LAND DISPOSAL RESTRICTION CAPACITY EXTENSION UNTIL MAY 8, 1992, PER 55 FED. R. 22520);
- (R) THE CLEAN WATER ACT, 33 USC SS 1251 ET SEQ., WHICH REGULATES ACTIVITY IN THE VICINITY OF WETLANDS;

TO BE CONSIDERED

- (A) THE EPA GUIDANCE ON METALS AND HYDROGEN CHLORIDE CONTROLS FOR HAZARDOUS WASTE INCINERATORS (EPA OFFICE OF SOLID WASTE, AUGUST 1989);
- (B) LEAD IN LIMITED AREAS OF SITE SOILS IN EXCESS OF 1,000 MG/KG (OSWER DIRECTIVE #9355.4-02). IF FATE AND TRANSPORT MODELING SHOWS THAT A LOWER VALUE IS MORE APPROPRIATE, THAT VALUE WILL BE USED.
- (C) DIOXIN IN PLASTIC FLUFF AND SOIL EXCEEDING 20 UG/KG. PREVIOUS DIOXIN REMEDIATION BY THE EPA AT TIMES BEACH, MISSOURI HAS REQUIRED CLEANUP TO THE 20 UG/KG LEVEL IN NON-RESIDENTIAL AREAS AT WHICH FUTURE USE IS TO BE AS A GREEN AREA, SUCH AS A PARK OR OPEN SPACE. ALTHOUGH CLEANUP LEVELS HAVE VARIED AT DIFFERENT SITES, THE 20 UG/KG LEVEL HAS ALSO BEEN USED IN SOME INDUSTRIALIZED AREAS AS WELL. IN THE TIME SINCE THOSE LEVELS WERE APPLIED, EPA HAS CHANGED ITS METHODS OF CALCULATING 2,3,7,8-TCDD EQUIVALENCE FOR THE DIOXIN AND DIBENZOFURAN COMPOUNDS. AT THE EDM SITE, THE NEW EQUIVALENCE VALUE IS TWICE THAT CALCULATED USING THE OLD METHOD. THEREFORE, THE NUMBER 20 UG/KG AT THE EDM SITE WILL PROVIDE PROTECTION EQUIVALENT TO 10 UG/KG, AS APPLIED AT SOME OTHER SITES BEFORE THE CALCULATION METHOD WAS CHANGED. IF FATE AND TRANSPORT MODELING SHOWS THAT A LOWER VALUE IS MORE APPROPRIATE, THAT VALUE WILL BE USED.
- (D) EXECUTIVE ORDER 11988, 40 CFR S 6, APPENDIX A, CONCERNING FEDERAL WETLANDS POLICIES;

EFFECT OF PROPOSED REMEDY:

INCINERATION WOULD ELIMINATE THE TOXICITY AND MOBILITY OF ORGANIC HOTSPOT CONTAMINANTS AND REDUCE THE TOTAL VOLUME OF CONTAMINATED MEDIA. STABILIZATION OF THE INCINERATOR RESIDUALS, SOILS, AND SEDIMENTS, IF NECESSARY, WOULD REDUCE THE TOXICITY AND MOBILITY OF INORGANIC CONTAMINANTS IN THESE MEDIA BY CHEMICALLY AND/OR PHYSICALLY BINDING THEM IN THE STABILIZATION MATRIX. VOLUME WOULD INCREASE SLIGHTLY. DISPOSAL OF THE STABILIZED/UNSTABILIZED MATERIAL EITHER OFFSITE OR CONSOLIDATION WITH THE REMAINDER OF THE FLUFF PILE, IF AN ONSITE CONTAINMENT REMEDY IS SELECTED FOR THAT OU (OU3), WOULD PREVENT CONTACT. OFFSITE DISPOSAL OF MISCELLANEOUS DEBRIS WILL PREVENT CONTACT. REMOVAL OF SEDIMENT FROM THE INTERMITTENT STREAM WOULD REMOVE THE HAZARD POSED TO AQUATIC LIFE BY METAL CONCENTRATIONS IN SEDIMENT AND SURFACE WATER - SURFACE WATER IS IMPACTED BY SEDIMENT CONTAMINATION THROUGH LEACHING OF CONTAMINANTS IN SEDIMENT TO SURFACE WATER. TOXICITY AND LONG-TERM EFFECTIVENESS WOULD BE ADDRESSED BY COMPLETELY REMOVING AND DISPOSING OF CONTAMINATED SEDIMENTS.

THE REMEDIAL OBJECTIVES FOR OU1 MEDIA ARE MET THROUGH THIS ALTERNATIVE, HOWEVER, AS DESCRIBED IN ALTERNATIVE 2, THE REMEDIAL OBJECTIVES FOR OU2, GROUND WATER, ARE NOT MET UNDER THIS ALTERNATIVE. ALTHOUGH THE EXISTING TRENCH SYSTEM COLLECTS AND TREATS SOME SHALLOW GROUND WATER, THERE IS AN INSUFFICIENT REDUCTION IN TOXICITY, MOBILITY, AND VOLUME FOR GROUND WATER THROUGH THIS ALTERNATIVE. THEREFORE, THIS ALTERNATIVE IS NOT PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT.

CAPITAL COST:	\$ 10,601,800
ANNUAL O&M, PRESENT WORTH:	\$ 966,000
TOTAL COST:	\$ 11,567,800

REMEDIAL ACTION ALTERNATIVE 4 - INCINERATION OF HOTSPOTS, STABILIZATION, DISPOSAL OR CONSOLIDATION, SHALLOW GROUND WATER COLLECTION/TREATMENT, ADDITIONAL GROUND WATER STUDIES.

IN ADDITION TO THE INCINERATION/STABILIZATION/DISPOSAL/CONSOLIDATION

ACTIVITIES OF ALTERNATIVE 3, ALTERNATIVE 4 PROVIDES FOR AN INTERIM REMEDY FOR OU2, GROUND WATER, OF ENHANCED COLLECTION AND TREATMENT OF SHALLOW GROUND WATER AND FURTHER STUDIES REGARDING THE PRACTICABILITY OF DEEP GROUND WATER RESTORATION. THE GROUND WATER ACTIVITIES FOR THIS ALTERNATIVE WOULD INCLUDE THE FOLLOWING:

- * INSTALL A GROUND WATER COLLECTION TRENCH PARALLEL TO THE EXISTING TRENCH, DOWN TO THE TOP OF BEDROCK, WITH AN ESTIMATED INFLOW RATE OF 20 GPM. THE DEEPENED TRENCH WOULD EXTEND THE LENGTH OF THE INTERMITTENT STREAM THAT IS POTENTIALLY FED BY OVERBURDEN GROUND WATER FLOW.
- * UPGRADE THE WASTE WATER TREATMENT FACILITY AS NECESSARY IN ORDER TO ACHIEVE PENNSYLVANIA NPDES PERMIT LIMITS FOR ORGANICS AND PENNSYLVANIA ARARS FOR METALS IN SURFACE WATERS, AS DESCRIBED IN THE PENNSYLVANIA AMBIENT WATER QUALITY CRITERIA (AWQC) VALUES (PA CODE 25, CHAPTER 93) AND PA SECONDARY DRINKING WATER STANDARDS.
- * EITHER UPGRADE THE EQUALIZATION LAGOON TO MEET NPDES REQUIREMENTS AND/OR RCRA REQUIREMENTS, OR CONSTRUCT A NEW EQUALIZATION LAGOON AS PART OF A NEW COLLECTION AND TREATMENT SYSTEM WHICH MEET THE AFOREMENTIONED CRITERIA. THE DEGREE OF UPGRADE AND/OR WHETHER A NEW LAGOON IS REQUIRED WILL BE DETERMINED DURING RD/RA.

THIS ALTERNATIVE INCLUDES DEEPENED INTERCEPTOR TRENCHES TO REMOVE ALL CONTAMINATED GROUND WATER FROM THE OVERBURDEN FLOW SYSTEM. THE EXISTING INTERCEPTOR TRENCHES WOULD BE SUPPLEMENTED BY A DEEPER TRENCH TO THE BEDROCK SURFACE WHICH WOULD COLLECT THE OVERBURDEN GROUND WATER LEAVING THE SITE AS UNDERFLOW BENEATH THE EXISTING SHALLOW TRENCHES. THIS WOULD REQUIRE RECONSTRUCTION FROM APPROXIMATELY THE AREA OF MW-3/0 WESTWARD AND ALONG THE SOUTHWEST BORDER OF THE SITE. THAT IS, THE STRETCH ALONG WHICH DEEPER OVERBURDEN FLOW OCCURS IN THE LOCAL WATER TABLE SYSTEM. THE TRENCHES WOULD EXTEND TO BEDROCK, WHICH IS APPROXIMATELY 20 FEET BELOW THE GROUND SURFACE. THE DEEPENED TRENCH IS ESTIMATED TO RECOVER ABOUT 20 GPM OF BOTH PERCHED FLOW AND LATERAL FLOW FROM THE LOCAL SYSTEM. DUE TO THE LIMITED THICKNESS AND VARIABLE HYDRAULIC CONDUCTIVITY OF THE OVERBURDEN SOIL, A PUMPING WELL SYSTEM IS NOT CONSIDERED TO BE TECHNICALLY APPLICABLE FOR THIS COMPONENT OF GROUND WATER COLLECTION.

THE WASTE WATER TREATMENT FACILITY (WWTF) WILL BE UPGRADED AS NECESSARY IN ORDER TO ACHIEVE PENNSYLVANIA NPDES PERMIT LIMITS FOR ORGANICS AND PENNSYLVANIA ARARS FOR METALS IN SURFACE WATERS AS DESCRIBED ABOVE. THE WWTF WILL TREAT COLLECTED LEACHATE, GROUND WATER, AND SCRUBBER WASTE WATER. REQUIRED UPGRADES MAY INCLUDE, BUT WOULD NOT BE LIMITED TO, A FILTRATION SYSTEM FOR METALS REMOVAL AND ADDITIONAL PUMPING FACILITIES AND PIPING TO ENSURE THAT ALL RUNOFF IS BEING DELIVERED TO THE WASTE WATER TREATMENT FACILITY. THE DESIGNS AND SPECIFICATIONS FOR THE UPGRADE INCLUDING THE TYPE AND EXTENT OF ADDITIONAL ACCESSORY PUMPS AND PIPING APPARATUS WILL OCCUR DURING RD/RA AND BE REFINED VIA PILOT SCALE TESTING ONSITE.

THE EQUALIZATION LAGOON WILL BE UPGRADED EITHER TO MEET NPDES AND/OR RCRA REQUIREMENTS, OR A NEW LAGOON WILL BE CONSTRUCTED AS PART OF A NEW COLLECTION AND TREATMENT SYSTEM. RCRA WOULD REQUIRE, AT A MINIMUM, A DOUBLE LINER AND LEAK DETECTION SYSTEM. THE DEGREE OF UPGRADE AND/OR WHETHER A NEW LAGOON IS REQUIRED WILL BE DETERMINED DURING RD/RA.

THE PRACTICABILITY OF RESTORING THE DEEP GROUND WATER SYSTEM WOULD BE EVALUATED AS PART OF THIS ALTERNATIVE. IMPLEMENTATION OF AN EFFECTIVE RECOVERY WELL SYSTEM IN THE BEDROCK IS EXPECTED TO BE DIFFICULT, DUE TO THE FRACTURED NATURE OF THE AQUIFER AT THE SITE WHICH RESULTS IN ANISOTROPIC FLOW CONDITIONS. THE COLLECTED GROUND WATER COULD HAVE MUCH LOWER CONSTITUENT CONCENTRATION LEVELS THAN THOSE OBSERVED AT THE SITE MONITORING WELLS DUE TO DILUTION BY UNCONTAMINATED GROUND WATER FROM

OFFSITE. ADDITIONALLY, WETLANDS DOWNGRAIENT OF THE SITE ADJACENT TO THE LITTLE SCHUYLKILL RIVER COULD BE NEGATIVELY IMPACTED BY A DEEP GROUND WATER RECOVERY SYSTEM BECAUSE THEY WOULD LIKELY BE DEPRIVED OF SUFFICIENT WATER TO MAINTAIN THE ECOSYSTEM.

TO BETTER ASSESS THE PRACTICABILITY OF DEEP GROUND WATER RESTORATION, FURTHER INFORMATION MAY BE COLLECTED ON THE EXTENT OF CONTAMINATION, TECHNICAL AND COST EFFECTIVENESS ESTIMATES FOR A DEEP GROUND WATER REMEDIATION SCHEME, AND THE POTENTIAL EFFECTS OF REMEDIATION ON DOWNGRAIENT WETLANDS. DATA GENERATED DURING THE INTERIM ACTION WILL BE USED TO DETERMINE WHEN AND WHERE THE RESTORATION OF GROUND WATER IS FEASIBLE. THE INTERIM REMEDY MAY BE INCORPORATED INTO THE DESIGN OF THE SITE REMEDY SPECIFIED IN THE FINAL ACTION ROD.

ARARS

THE ARARS FOR OU1 OF THIS ALTERNATIVE ARE THE SAME AS FOR ALTERNATIVE 3. ARARS WHICH ADDRESS OU2 ARE SHOWN BELOW. BECAUSE THE REMEDY PROPOSED FOR OU2, GROUND WATER, IS INTERIM IN NATURE, EPA NEED NOT ADDRESS ALL OF THE ARARS FOR OU2 AT THIS TIME; THE ADDITIONAL ARARS WILL BE DELINEATED WHEN EPA PREPARES THE FINAL ACTION ROD, PER 40 CFR S 300.430(F)(1)(II)(C)(1).

CHEMICAL-SPECIFIC ARAR

- (A) THE PENNSYLVANIA AMBIENT WATER QUALITY CRITERIA (AWQC) VALUES (PA CODE 25, CHAPTER 93) FOR COPPER (4.0 UG/L), LEAD (0.6 UG/L), ZINC (36 UG/L), AND SECONDARY DRINKING WATER STANDARDS UNDER THE PENNSYLVANIA SAFE DRINKING WATER ACT (PA CODE, TITLE 25, CHAPTER 109) FOR IRON (300 UG/L) AND MANGANESE (50 UG/L) IN SURFACE WATER. EPA WILL ALSO REQUIRE COMPLIANCE WITH THE TERMS OF THE NPDES PERMIT FOR THE WASTE WATER TREATMENT FACILITY.

ACTION-SPECIFIC ARAR

- (B) PADER HAZARDOUS WASTE REGULATIONS (PA CODE, TITLE 25, CHAPTERS 260-270) FOR THE EQUALIZATION LAGOON UPGRADES/NEW LAGOON.

EFFECT OF PROPOSED REMEDY:

THE REMEDIAL OBJECTIVES FOR BOTH OU1 AND OU2 ARE MET THROUGH THIS ALTERNATIVE. THE HOTSPOT AREAS, CONTAMINATED SOILS, SEDIMENTS, AND DEBRIS WILL BE REMEDIATED AND THE OBJECTIVES WILL BE MET AS DESCRIBED IN ALTERNATIVE 3. IN ADDITION, UPGRADING THE SHALLOW GROUND WATER COLLECTION/TREATMENT SYSTEM WILL REDUCE MOBILITY BY COLLECTING ANY CONTAMINATED OVERBURDEN AND SHALLOW GROUND WATER THAT CURRENTLY UNDERFLOWS THE EXISTING INTERCEPTOR TRENCHES AND DISCHARGES TO THE INTERMITTENT STREAM THROUGH SEEPS OR DIRECT GROUND WATER DISCHARGE. THEREBY, TOXICITY TO AQUATIC LIFE IN THE STREAM WILL BE REDUCED AND TOXICITY OF THE COLLECTED WASTE WATER WILL BE ELIMINATED THROUGH TREATMENT. ADDITIONALLY, A PROVISION IS INCLUDED WHICH ALLOWS DEEP GROUND WATER REMEDIATION IF IT IS FOUND TO BE PRACTICABLE.

CAPITAL COST:	\$ 11,001,000
ANNUAL O&M, PRESENT WORTH:	\$ 1,428,000
TOTAL COST:	\$ 12,429,000

REMEDIAL ACTION ALTERNATIVE 5 - INCINERATION OF HOTSPOTS, STABILIZATION, DISPOSAL OR CONSOLIDATION, SHALLOW AND DEEP GROUND WATER COLLECTION/TREATMENT.

THIS ALTERNATIVE IS IDENTICAL TO ALTERNATIVE 4, EXCEPT THAT DEEP GROUND WATER WOULD BE REMEDIATED WITHOUT FURTHER CONSIDERATION AS TO PRACTICABILITY. THIS ALTERNATIVE WOULD INCLUDE THE FOLLOWING ACTIONS FOR DEEP GROUND WATER:

- * INSTALL TWO OR MORE GROUND WATER RECOVERY WELLS
- * UPGRADE OR CONSTRUCT A NEW WASTE WATER TREATMENT FACILITY.
- * RECOVER AND TREAT THE DEEP GROUND WATER FOR TCE AND MANGANESE REMOVAL.

THIS ALTERNATIVE CONSISTS OF THE USE OF PUMPING WELLS AND INTERCEPTOR TRENCHES TO REMOVE ALL CONTAMINATED GROUND WATER FROM BOTH THE OVERBURDEN AND BEDROCK FLOW SYSTEMS. THIS RECOVERY SYSTEM WOULD OPERATE UNTIL EITHER THE GROUND WATER CLEANUP POTENTIAL ARARS WERE ACHIEVED OR PRACTICAL LIMITS OF CONSTITUENT RECOVERY WERE REACHED. A SYSTEM OF TWO OR MORE WELLS WOULD BE USED. THE ACTUAL NUMBER OF WELLS AND PUMPING RATES WOULD DEPEND ON A DETAILED SYSTEM DESIGN WHICH WOULD BE CONDUCTED DURING RD/RA.

DESIGN OF AN EFFECTIVE GROUND WATER RECOVERY SYSTEM FOR THE BEDROCK WOULD BE DIFFICULT DUE TO THE ANISOTROPIC NATURE OF FLOW.

THE RECOVERED GROUND WATER WOULD BE TREATED IF NECESSARY USING A CHEMICAL-OXIDATION-FILTRATION TYPE SYSTEM. IF GROUND WATER TREATMENT WAS NEEDED, DETERMINATION OF THE MOST APPROPRIATE TREATMENT OPTION WOULD BE MADE DURING THE RD/RA PHASE.

ARARS

THE ARARS FOR OU1 OF THIS ALTERNATIVE ARE THE SAME AS FOR ALTERNATIVES 3 AND 4. THE ARARS FOR OU2 ARE THE SAME AS FOR OU2 OF ALTERNATIVE 4, WITH THE FOLLOWING ADDITIONS:

CHEMICAL-SPECIFIC ARARS

- (A) THE PENNSYLVANIA STANDARDS FOR TCE AND MANGANESE IN GROUND WATER (25 PA CODE SS 264.90 - 264.100);

LOCATION-SPECIFIC ARARS

- (B) RCRA LOCATION STANDARDS FOR TREATMENT, STORAGE, OR DISPOSAL FACILITIES LOCATED IN A 100-YEAR FLOODPLAIN, 40 CFR PART 264;
- (C) THE CLEAN WATER ACT (CWA) AND THE FISH AND WILDLIFE COORDINATION ACT, BOTH OF WHICH REGULATE ACTIVITY IN THE VICINITY OF WETLANDS, 33 USC SS 1251 ET SEQ.;
- (D) THE PA HAZARDOUS WASTE FACILITY SITING REGULATIONS, TITLE 25, CHAPTER 269, SUBCHAPTER A), EXCEPT TO THE EXTENT PERMITS ARE NOT REQUIRED, PER S 121(E) OF CERCLA, 42 USC S 9621(E). THIS REQUIRES THAT NO PORTION OF A NEW FACILITY MAY BE LOCATED WITHIN A WETLAND OR BORDERING A VEGETATED WETLAND, UNLESS APPROVED BY THE STATE. CHAPTER 105 (25 PA CODE SECTIONS 105.1 ET SEQ.) IF EPA DETERMINES THAT CONSTRUCTION WITHIN THE WETLAND AREA IS NECESSARY;
- (E) EXECUTIVE ORDER 11988, THE FEDERAL FLOODPLAINS MANAGEMENT EXECUTIVE ORDER, 40 CFR S 6, APPENDIX A.

EFFECT OF PROPOSED REMEDY:

THIS ALTERNATIVE MEETS THE REMEDIAL OBJECTIVES OF OU1 AND OU2. HOTSPOT AREAS, CONTAMINATED SOILS, SEDIMENTS, DEBRIS, AND SHALLOW GROUND WATER WOULD BE REMEDIATED AND OBJECTIVES MET AS DESCRIBED FOR ALTERNATIVE 4. WHILE THIS ALTERNATIVE ATTEMPTS TO TREAT DEEP GROUND WATER, THE NECESSITY OF SUCH AN ACTION, THE TECHNICAL AND COST EFFECTIVENESS, AND THE POTENTIALLY SERIOUS NEGATIVE CONSEQUENCES TO DOWNGRAIENT WETLANDS PROVIDE SUBSTANTIAL DOUBT AS TO WHETHER SUCH ACTION IS ACCEPTABLE. IN PARTICULAR, THE LOCATION-SPECIFIC ARARS FOR PROTECTION OF WETLANDS

LIKELY WOULD NOT BE MET, INCLUDING EXECUTIVE ORDER 11990 (40 CFR S 6, APPENDIX A), WHICH SETS FORTH A POLICY DESIGNED TO MINIMIZE OR PREVENT ANY ADVERSE IMPACTS TO WETLAND AREAS; THE PUMPING AND TREATING OF CONTAMINATED GROUND WATER WOULD LIKELY DEWATER THE WETLAND AREAS.

CAPITAL COST:	\$ 12,915,800
ANNUAL O&M, PRESENT WORTH:	\$ 2,928,000
TOTAL COST:	\$ 15,843,800

#CAA

IX. COMPARATIVE ANALYSIS OF ALTERNATIVES

THE FIVE REMEDIAL ACTION ALTERNATIVES DESCRIBED ABOVE WERE EVALUATED UNDER THE NINE EVALUATION CRITERIA AS SET FORTH IN THE NCP 40 CFR S 300.430(E)(9). THESE NINE CRITERIA ARE ORGANIZED ACCORDING TO THE GROUPS BELOW AND CAN BE CATEGORIZED INTO THREE GROUPS: THRESHOLD CRITERIA, PRIMARY BALANCING CRITERIA, AND MODIFYING CRITERIA.

THRESHOLD CRITERIA

OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT
COMPLIANCE WITH APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS
(ARARS)

PRIMARY BALANCING CRITERIA

LONG-TERM EFFECTIVENESS
REDUCTION OF TOXICITY, MOBILITY, OR VOLUME THROUGH TREATMENT
SHORT-TERM EFFECTIVENESS
IMPLEMENTABILITY
COST

MODIFYING CRITERIA

COMMUNITY ACCEPTANCE
STATE ACCEPTANCE

THESE EVALUATION CRITERIA RELATE DIRECTLY TO REQUIREMENTS IN SECTION 121 OF CERCLA, 42 USC SECTION 9621, WHICH DETERMINE THE OVERALL FEASIBILITY AND ACCEPTABILITY OF THE REMEDY. THRESHOLD CRITERIA MUST BE SATISFIED IN ORDER FOR A REMEDY TO BE ELIGIBLE FOR SELECTION. PRIMARY BALANCING CRITERIA ARE USED TO WEIGH MAJOR TRADE-OFFS BETWEEN REMEDIES. STATE AND COMMUNITY ACCEPTANCE ARE MODIFYING CRITERIA FORMALLY TAKEN INTO ACCOUNT AFTER PUBLIC COMMENT IS RECEIVED ON THE PROPOSED PLAN. THE EVALUATIONS ARE AS FOLLOWS:

1) OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

A PRIMARY REQUIREMENT OF CERCLA IS THAT THE SELECTED REMEDIAL ACTION BE PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT. A REMEDY IS PROTECTIVE IF IT REDUCES CURRENT AND POTENTIAL RISKS TO ACCEPTABLE LEVELS UNDER THE ESTABLISHED RISK RANGE POSED BY EACH EXPOSURE PATHWAY AT THE SITE.

A. FLUFF, SOILS, SEDIMENTS, DEBRIS

THE INCINERATION, STABILIZATION, AND DISPOSAL OPTIONS OF ALTERNATIVES 3, 4, AND 5 WOULD PROVIDE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT BY ELIMINATING, REDUCING, AND CONTROLLING RISK THROUGH TREATMENT AND ENGINEERING CONTROLS. EXPOSURE TO THE PRINCIPAL THREATS AT THE SITE AND ALL OTHER CONTAMINATED SOLID MEDIA WOULD BE ELIMINATED THROUGH INCINERATION, STABILIZATION, AND DISPOSAL. INCINERATION WOULD BE REQUIRED TO COMPLETELY DESTROY ALL ORGANICS. RESIDUALS AND SOILS/SEDIMENTS WITH METALS EXCEEDING TARGET LEVELS WOULD BE STABILIZED, IF NECESSARY, AND DISPOSED TO MINIMIZE THE POTENTIAL FOR FUTURE MIGRATION. REMOVAL OF SEDIMENT FROM THE INTERMITTENT STREAM WOULD REMOVE THE HAZARD POSED BY METAL CONCENTRATIONS TO AQUATIC LIFE. DISPOSAL OF TREATED AND UNTREATED MATERIALS, INCLUDING MISCELLANEOUS

DEBRIS, WILL PREVENT CONTACT AND FURTHER REDUCE MOBILITY.

B. GROUND WATER

BY UPGRADING SURFACE WATER RUNON/RUNOFF CONTROLS, ALTERNATIVES 3, 4, AND 5 DECREASE CONTAMINANT MIGRATION VIA FLUFF AND CONTAMINANT TRANSPORT TO THE GROUND WATER AND SURFACE WATER. ALTERNATIVES 2 AND 3 ALLOW CONTINUED OPERATION OF THE EXISTING GROUND WATER COLLECTION AND TREATMENT SYSTEM, WITHOUT MODIFICATION, WHICH ALLOWS SOME SHALLOW GROUND WATER TO UNDERFLOW THE EXISTING TRENCH SYSTEM WITHOUT TREATMENT. ALTERNATIVE 4 IS MORE PROTECTIVE THAN ALTERNATIVES 2 AND 3 BECAUSE IT INCLUDES UPGRADED SURFACE WATER RUNON/RUNOFF CONTROLS AND ALSO ENHANCES SHALLOW GROUND WATER COLLECTION AND TREATMENT WHILE FURTHER STUDYING THE PRACTICABILITY OF DEEP GROUND WATER RESTORATION. ALTERNATIVE 5, ALTHOUGH IT ADDRESSES THE SHALLOW AND DEEP GROUND WATER, MAY LIKELY DEWATER DOWNGRAIENT WETLANDS THROUGH PUMPING, THEREBY BEING UNPROTECTIVE.

ALTERNATIVE 1, NO ACTION, ACCOMPLISHES NONE OF THE ABOVE AND, THEREFORE, IS NOT PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT. NO ACTION WOULD OCCUR AT THE SITE AND THE RISKS TO HUMAN HEALTH AND THE ENVIRONMENT WOULD REMAIN UNCHANGED.

2) COMPLIANCE WITH APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

THIS CRITERION ADDRESSES WHETHER OR NOT A REMEDY WILL MEET ALL OF THE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS OF OTHER ENVIRONMENTAL STATUTES AND/OR PROVIDE GROUNDS FOR INVOKING A WAIVER.

A. FLUFF, SOILS, SEDIMENTS, DEBRIS

ALTERNATIVES 3, 4, AND 5 WOULD COMPLY WITH ALL APPLICABLE FEDERAL AND STATE ENVIRONMENTAL LAWS. INCINERATION WOULD RESULT IN THE DESTRUCTION OF ORGANIC CONTAMINANTS TO BELOW FEDERAL AND STATE STANDARDS. FEDERAL AND STATE REGULATIONS/ GUIDELINES REGARDING THE INCINERATION OF HAZARDOUS WASTES WOULD BE COMPLIED WITH AS WOULD AIR EMISSIONS REQUIREMENTS. FEDERAL TRANSPORTATION AND LAND DISPOSAL ARARS WOULD ALSO BE MET. ALTERNATIVES 1 AND 2 WOULD NOT MEET ARARS FOR THE SOLID MEDIA AND WOULD NOT COMPLY WITH THE CERCLA PREFERENCE FOR TREATMENT.

B. GROUND WATER

ALTERNATIVES 4 AND 5 ADDRESS THE ISSUE OF CONTAMINATED GROUND WATER WHILE ALTERNATIVES 1, 2, AND 3 DO NOT. ARARS FOR THE INTERIM GROUND WATER ACTION UNDER ALTERNATIVE 4 WILL BE MET WITH RESPECT TO DISCHARGES FROM THE WASTE WATER TREATMENT FACILITY AND, SUBSEQUENT TARGET LEVELS TO BE ACHIEVED FOR SURFACE WATER. SINCE THE SELECTED REMEDY, ALTERNATIVE 4, IS AN INTERIM REMEDY FOR OU2, GROUND WATER, FURTHER COMPLIANCE WITH GROUND WATER ARARS WILL BE ADDRESSED IN THE ROD FOR THE FINAL REMEDY. ALTERNATIVE 5 COMPLIES WITH CHEMICAL-SPECIFIC GROUND WATER ARARS, HOWEVER, LOCATION- AND ACTION-SPECIFIC ARARS MAY NOT BE MET, ESPECIALLY WITH REGARD TO WETLANDS.

3) LONG-TERM EFFECTIVENESS AND PERMANENCE

LONG-TERM EFFECTIVENESS AND PERMANENCE ADDRESSES THE LONG-TERM PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT ONCE REMEDIAL ACTION CLEANUP GOALS HAVE BEEN ACHIEVED, AND FOCUSES ON RESIDUAL RISKS THAT WILL REMAIN AFTER COMPLETION OF THE REMEDIAL ACTION.

A. FLUFF, SOILS, SEDIMENTS, DEBRIS

ALTERNATIVES 3, 4, AND 5 WOULD PERMANENTLY AND COMPLETELY ELIMINATE THE HOTSPOT AREAS WHICH PRESENT THE PRINCIPAL THREAT AT THE SITE. INCINERATOR RESIDUALS AND METALS CONTAMINATED SOILS AND SEDIMENTS WOULD BE STABILIZED, IF NECESSARY, AND DISPOSED TO MINIMIZE THE POTENTIAL FOR ANY FUTURE MIGRATION FROM THESE RESIDUALS. MISCELLANEOUS DEBRIS WOULD

BE SAFELY DISPOSED. THE REMOVAL OF THE CONTAMINATED SEDIMENT FROM THE STREAM WOULD ELIMINATE THE IMPACT ON AQUATIC LIFE IN THE INTERMITTENT STREAM.

B. GROUND WATER

THE SELECTED INTERIM REMEDY, ALTERNATIVE 4, REMEDY PROVIDES FOR TREATMENT OF SHALLOW GROUND WATER, WITH A FINAL ANALYSIS OF LONG-TERM EFFECTIVENESS AND PERMANENCE FOR GROUND WATER TO BE ADDRESSED IN THE FINAL ACTION ROD. ALTERNATIVE 5 MIGHT BE EFFECTIVE IN THE LONG-TERM BY ATTEMPTING TO TREAT BOTH SHALLOW AND DEEP GROUND WATER CONTAMINATION. CONTAMINANT CONCENTRATIONS MIGHT BE PERMANENTLY REDUCED TO NEAR OR BELOW POTENTIAL ARARS, AND MANGANESE MIGHT CONTINUALLY BE REDUCED AT A SLOWER RATE. WHETHER THIS WOULD BE POSSIBLE OR EFFECTIVE AND PERMANENT IN THE LONG-TERM WILL BE ADDRESSED IN THE FINAL ACTION ROD FOR THIS OU.

ALTERNATIVES 1 AND 2 PROVIDE NO LONG-TERM EFFECTIVENESS OR PERMANENCE FOR SOLID OR GROUND WATER MEDIA. ALTERNATIVE 3 PROVIDES NO LONG-TERM EFFECTIVENESS OR PERMANENCE FOR GROUND WATER.

4) REDUCTION OF TOXICITY, MOBILITY, AND VOLUME

THIS EVALUATION CRITERION ADDRESSES THE DEGREE TO WHICH A TECHNOLOGY OR REMEDIAL ALTERNATIVE REDUCES THE TOXICITY, MOBILITY, OR VOLUME OF A HAZARDOUS SUBSTANCE. SECTION 121(B) OF CERCLA, 42 USC SECTION 9621(B), ESTABLISHES A PREFERENCE FOR REMEDIAL ACTIONS THAT PERMANENTLY AND SIGNIFICANTLY REDUCE THE TOXICITY, MOBILITY, OR VOLUME OF HAZARDOUS SUBSTANCES OVER REMEDIAL ACTIONS WHICH WILL NOT RESULT IN SUCH REDUCTION.

A. FLUFF, SOILS, SEDIMENTS, DEBRIS

ALTERNATIVES 3, 4, AND 5 WILL ELIMINATE THE TOXICITY OF DIOXIN, PCBS, AND OTHER ORGANICS VIA THERMAL DESTRUCTION. THE VOLUME OF CONTAMINATED MEDIA WILL BE REDUCED BY 80 PERCENT AFTER INCINERATION, HOWEVER, A CORRESPONDING 15-20 PERCENT VOLUME INCREASE IS EXPECTED AFTER STABILIZATION OF THE RESIDUALS. AN OVERALL 67 PERCENT VOLUME REDUCTION IS EXPECTED TO BE ACHIEVED. METALS CONCENTRATIONS IN THE RESIDUALS WOULD INCREASE, WHICH INCREASES TOXICITY, HOWEVER, THIS EFFECT WOULD BE OVERCOME THROUGH STABILIZING THE RESIDUALS, IF TOXICITY TESTING SHOWS THAT THIS IS NECESSARY. STABILIZATION OF THE RESIDUALS, SEDIMENTS AND SOILS, IF NECESSARY, WOULD REDUCE TOXICITY AND MOBILITY BY CHEMICALLY AND/OR PHYSICALLY BINDING THE INORGANIC CONTAMINANTS IN THE MATRIX. THEREFORE, TOXICITY AND MOBILITY WILL BE GREATLY REDUCED FOR THESE ALTERNATIVES BY DESTROYING THE ORGANICS AND STABILIZING THE INORGANICALLY CONTAMINATED RESIDUALS/SOILS/SEDIMENTS.

ALTERNATIVES 1 AND 2 PROVIDE NO REDUCTION IN TOXICITY, MOBILITY, AND VOLUME OF THE SOLID MEDIA.

B. GROUND WATER

ALTERNATIVES 4 AND 5 ADDRESS THE TOXICITY, MOBILITY, AND VOLUME OF CONTAMINATED GROUND WATER BY COLLECTING AND TREATING SHALLOW GROUND WATER. ALTERNATIVE 5 ALSO WOULD ATTEMPT TO REDUCE TOXICITY AND MOBILITY WITH SUBSEQUENT VOLUME REDUCTIONS OF CONTAMINATED DEEP GROUND WATER. ALTERNATIVES 2 AND 3 CURRENTLY REDUCE THE TOXICITY OF SOME SHALLOW GROUND WATER WHICH IS COLLECTED AND TREATED UNDER THE EXISTING SYSTEM, HOWEVER, SOME SHALLOW GROUND WATER UNDERFLOWS THE EXISTING SYSTEM WITHOUT TREATMENT AND DEEP GROUND WATER CONTAMINATION IS NOT ADDRESSED.

5) SHORT-TERM EFFECTIVENESS

SHORT-TERM EFFECTIVENESS ADDRESSES THE PERIOD OF TIME NEEDED TO ACHIEVE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT, AND ANY ADVERSE IMPACTS THAT MAY BE POSED DURING THE CONSTRUCTION AND OPERATION PERIOD UNTIL CLEANUP GOALS ARE ACHIEVED.

A. FLUFF, SOILS, SEDIMENTS, DEBRIS

EPA ESTIMATES APPROXIMATELY 288 DAYS WILL BE NEEDED UNDER ALTERNATIVES 3, 4, AND 5 TO ACHIEVE REDUCTIONS IN TOXICITY, MOBILITY, AND VOLUME FOR THE SOLID MEDIA. RISKS TO HUMAN HEALTH AND THE ENVIRONMENT WOULD BE MITIGATED THROUGH THE USE OF ADVANCED AIR EMISSIONS CONTROL SYSTEMS FOR THE INCINERATOR. DRAINAGE CONTROLS WOULD PREVENT CONTINUED EROSION AND END TRANSPORT OF CONTAMINATED SOILS TO THE INTERMITTENT STREAM. REMOVAL OF THE INTERMITTENT STREAM SEDIMENTS WOULD MITIGATE ADVERSE IMPACTS TO AQUATIC LIFE QUICKLY.

B. GROUND WATER

REDUCTIONS IN SHALLOW GROUND WATER CONTAMINATION WOULD BE ACHIEVED AS SOON AS THE DEEPEMED TRENCH AND IMPROVED TREATMENT SYSTEM WERE IMPLEMENTED UNDER ALTERNATIVES 4 OR 5. ALTERNATIVE 2 WOULD HAVE NO SHORT TERM EFFECTIVENESS FOR THE SOLID MEDIA OR GROUND WATER SINCE SITE RISKS ARE NOT REDUCED FROM EXISTING CONDITIONS.

(6) IMPLEMENTABILITY

THIS IS THE TECHNICAL AND ADMINISTRATIVE FEASIBILITY OF A REMEDY, INCLUDING THE AVAILABILITY OF MATERIALS AND SERVICES NEEDED TO IMPLEMENT THE CHOSEN SOLUTION.

A. FLUFF, SOILS, SEDIMENTS, DEBRIS

ALTERNATIVES 3, 4, AND 5 ARE IMPLEMENTABLE. EQUIPMENT REQUIRED, INCLUDING A MOBILE INCINERATOR IF ONSITE INCINERATION IS IMPLEMENTED, AND TYPICAL EARTH MOVING EQUIPMENT IS COMMERCIALY AVAILABLE. HOWEVER, ADVANCE SCHEDULING WOULD BE NECESSARY TO ATTAIN A MOBILE INCINERATOR. OFFSITE INCINERATION IS CURRENTLY NOT IMPLEMENTABLE DUE TO THE LACK OF PERMITTED FACILITIES. THE INCINERATOR WOULD BE FITTED WITH ADVANCED EMISSIONS CONTROL SYSTEMS TO REDUCE POTENTIAL SHORT-TERM RISKS TO WITHIN AN ACCEPTABLE RANGE. THERE WOULD BE NO IMPLEMENTATION ISSUES ASSOCIATED WITH ALTERNATIVES 1, 2, AND 3.

B. GROUND WATER

ONLY ALTERNATIVES 4 AND 5 PROVIDE FOR ADDITIONAL MEASURES TO REMEDY GROUND WATER. TO BETTER ASSESS THE PRACTICABILITY (AND IMPLEMENTABILITY) OF DEEP GROUND WATER RESTORATION, FURTHER INFORMATION MAY BE COLLECTED UNDER ALTERNATIVE 4 ON THE EXTENT OF CONTAMINATION, TECHNICAL AND COST EFFECTIVENESS ESTIMATES FOR A DEEP GROUND WATER REMEDIATION SCHEME, AND THE POTENTIAL EFFECTS OF REMEDIATION ON DOWNGRAIENT WETLANDS. DATA GENERATED DURING THE INTERIM ACTION WOULD BE USED TO DETERMINE WHEN AND WHERE THE RESTORATION OF GROUND WATER IS FEASIBLE. THE INTERIM REMEDY MIGHT BE INCORPORATED INTO THE DESIGN OF THE SITE REMEDY SPECIFIED IN THE FINAL ACTION ROD. THE IMPLEMENTABILITY OF ALTERNATIVE 5 IS QUESTIONABLE BECAUSE OF WETLANDS ARARS ISSUES AND THE TECHNICAL LIMITS OF ACHIEVING GROUND WATER CLEANUP GOALS IN A FRACTURED BEDROCK AQUIFER. THERE ARE NO IMPLEMENTABILITY ISSUES CONCERNING GROUND WATER ASSOCIATED WITH ALTERNATIVES 1, 2 AND 3 SINCE NO ADDITIONAL ACTIONS ARE TAKEN TO REMEDY GROUND WATER.

7) COST

CERCLA REQUIRES SELECTION OF A COST-EFFECTIVE REMEDY THAT PROTECTS HUMAN HEALTH AND THE ENVIRONMENT AND MEETS THE OTHER REQUIREMENTS OF THE STATUTE. PROJECT COSTS INCLUDE ALL CONSTRUCTION AND OPERATION AND MAINTENANCE COSTS INCURRED OVER THE LIFE OF THE PROJECT. CAPITAL COSTS INCLUDE THOSE EXPENDITURES NECESSARY TO IMPLEMENT A REMEDIAL ACTION.

THE COSTS OF THE FIVE ALTERNATIVES RANGE FROM \$ 0 TO \$15,852,820. THE DEGREE OF PROTECTION PROVIDED BY THE ALTERNATIVES ALSO VARIES. COMPARISON OF DIFFERENT LEVELS OF COSTS FOR DIFFERENT LEVELS OF PROTECTIVENESS AND PERMANENCE OF TREATMENT IS A PRIMARY DECISION

CRITERION IN THE COST-EFFECTIVENESS EVALUATION.

ALTERNATIVES 3, 4, AND 5 ARE THE HIGHEST IN COST, BUT OFFER A HIGHER LEVEL OF PROTECTION BY PROVIDING PERMANENT RELIEF FROM EXPOSURE TO THE PRINCIPAL CONTAMINANTS AT THE SITE. A BREAKDOWN OF THE COSTS ASSOCIATED WITH ALTERNATIVE 4, THE SELECTED ALTERNATIVE, IS PROVIDED IN TABLE 15.

8) COMMUNITY ACCEPTANCE

A PUBLIC MEETING ON THE PROPOSED PLAN WAS HELD ON FEBRUARY 19, 1991 IN HOMETOWN, PENNSYLVANIA. MOST COMMENTS RECEIVED AT THAT MEETING CENTERED ON HEALTH CONCERNS RELATED TO ONSITE INCINERATION. COMMENTS RECEIVED DURING THE MEETING AND COMMENT PERIOD ARE DISCUSSED IN THE RESPONSIVENESS SUMMARY ATTACHED TO THIS ROD.

9) STATE ACCEPTANCE

THE COMMONWEALTH OF PENNSYLVANIA HAS CONCURRED WITH THIS SELECTED REMEDIAL ACTION.

#SR

X. THE SELECTED REMEDY

ALTERNATIVE 4: INCINERATION OF HOTSPOTS, STABILIZATION, DISPOSAL OR CONSOLIDATION, SHALLOW GROUND WATER COLLECTION/TREATMENT, ADDITIONAL GROUND WATER STUDIES.

BASED ON THE FINDINGS IN THE RI/FS AND THE NINE CRITERIA LISTED ABOVE, THE US EPA HAS SELECTED ALTERNATIVE 4. ALTERNATIVE 4 REPRESENTS THE BEST BALANCE AMONG THE EVALUATION CRITERIA. THE REMEDY FOR OU1 OF THAT ALTERNATIVE SATISFIES THE STATUTORY REQUIREMENTS OF PROTECTIVENESS, COMPLIANCE WITH ARARS, COST EFFECTIVENESS, AND THE UTILIZATION OF PERMANENT SOLUTIONS AND TREATMENT TO THE MAXIMUM EXTENT PRACTICABLE. THE EXTENT TO WHICH OU2 SATISFIES STATUTORY REQUIREMENTS WILL BE DETERMINED IN THE FINAL ACTION ROD FOR THAT OU. ALTERNATIVE 4 IS SELECTED AS THE MOST APPROPRIATE REMEDY FOR MEETING THE GOALS OF OPERABLE UNITS 1 AND 2 AT THE EASTERN DIVERSIFIED METALS SITE. WHILE ALTERNATIVE 5 PROVIDES FOR REMEDIATION OF DEEP GROUND WATER, EPA REMAINS SERIOUSLY CONCERNED THAT THE PUMPING AND TREATING OF THIS AQUIFER WILL ADVERSELY AFFECT THE NEARBY WETLANDS AREA BY DEPRIVING IT OF A SUBSTANTIAL AMOUNT OF WATER.

AS DISCUSSED IN SECTION VIII, ALTERNATIVE 4 PROVIDES FOR A FINAL REMEDY FOR OU1 MEDIA CONSISTING PRINCIPALLY OF TREATMENT AND DISPOSAL OF APPROXIMATELY 5,600 CUBIC YARDS OF HOTSPOT FLUFF AND SOILS, 600 CUBIC YARDS OF METALS CONTAMINATED SEDIMENTS AND SOILS, AND 14,000 CUBIC YARDS OF MISCELLANEOUS DEBRIS, AND AN INTERIM REMEDY FOR OU2, GROUND WATER, WHICH INCLUDES ENHANCING SHALLOW GROUND WATER COLLECTION AND TREATMENT AND FURTHER STUDY ON THE PRACTICABILITY OF DEEP GROUND WATER RESTORATION. THE MAJOR COMPONENTS OF THIS ALTERNATIVE INCLUDE THE FOLLOWING:

- * EXCAVATE AND INCINERATE, EITHER ONSITE OR OFFSITE, DIOXIN CONTAMINATED FLUFF EXCEEDING THE TARGET LEVEL. THE TARGET LEVEL FOR DIOXIN WILL BE EITHER 20 UG/KG OR A LEVEL AS DETERMINED BY A RECOGNIZED FATE AND TRANSPORT MODEL, WHICHEVER IS LOWER. THE ESTIMATED VOLUME OF DIOXIN CONTAMINATED FLUFF IS 500 CUBIC YARDS.
- * EXCAVATE AND INCINERATE, EITHER ONSITE OR OFFSITE, PCB CONTAMINATED FLUFF AND SOILS IN EXCESS OF THE TARGET LEVEL. THE TARGET LEVEL FOR PCB CONTAMINATED FLUFF AND SOILS WILL BE EITHER 25 MG/KG OR A LEVEL AS DETERMINED BY A RECOGNIZED FATE AND TRANSPORT MODEL, WHICHEVER IS LOWER. THE ESTIMATED VOLUME OF PCB CONTAMINATED FLUFF AND SOIL IS 5,160 CUBIC YARDS.

- * REMOVE THE LEAD CONTAMINATED SOILS IN THE DRAINAGE DITCHES ABOVE TARGET LEVELS. THE TARGET LEVEL FOR LEAD CONTAMINATED SOILS WILL BE EITHER 1,000 MG/KG OR A LEVEL AS DETERMINED BY A RECOGNIZED FATE AND TRANSPORT MODEL, WHICHEVER IS LOWER. THE ESTIMATED VOLUME OF LEAD CONTAMINATED SOILS IS 480 CUBIC YARDS.
- * REMOVE THE METALS CONTAMINATED SAND/SILT/CLAY SIZE STREAM SEDIMENTS ABOVE TARGET LEVELS. TARGET LEVELS WILL BE DETERMINED BY A RECOGNIZED FATE AND TRANSPORT MODEL. THE ESTIMATED VOLUME OF METALS CONTAMINATED SEDIMENTS IS 120 CUBIC YARDS.
- * RUN THE EP TOXICITY TEST, OR ANOTHER APPROPRIATE TOXICITY TEST AS DETERMINED DURING RD/RA, ON THE INCINERATOR RESIDUALS AND MISCELLANEOUS DEBRIS. IF SOILS AND SEDIMENTS WILL BE DISPOSED OFFSITE RATHER THAN CONSOLIDATED WITH THE REMAINDER OF THE FLUFF PILE ONSITE, THEN ALSO TEST THESE MEDIA.
- * IF INCINERATOR RESIDUALS PASS THE TOXICITY TEST, THEN EITHER DISPOSE IN AN OFFSITE MUNICIPAL LANDFILL OR CONSOLIDATE WITH THE REMAINDER OF THE FLUFF PILE ONSITE. IF THE RESIDUALS FAIL THE TOXICITY TEST, THEN TREAT THROUGH STABILIZATION TO A LEVEL WHICH REMOVES THE CHARACTERISTIC BY WHICH THEY FAILED, THEN EITHER DISPOSE IN AN OFFSITE MUNICIPAL LANDFILL OR CONSOLIDATE WITH THE REMAINDER OF THE FLUFF PILE ONSITE.
- * IF SOILS AND/OR SEDIMENTS PASS THE TOXICITY TEST, THEN DISPOSE IN AN OFFSITE MUNICIPAL LANDFILL. IF SOILS AND/OR SEDIMENTS FAIL THE TOXICITY TEST, THEN TREAT THROUGH STABILIZATION TO A LEVEL WHICH REMOVES THE CHARACTERISTIC BY WHICH THEY FAILED AND DISPOSE IN AN OFFSITE MUNICIPAL LANDFILL.
- * IF THE MISCELLANEOUS DEBRIS PASSES THE TOXICITY TEST, THEN DISPOSE IN AN OFFSITE MUNICIPAL LANDFILL. IF THE MISCELLANEOUS DEBRIS FAILS THE TEST, THEN DISPOSE IN A RCRA LANDFILL UNIT WHICH MEETS THE STATUTORY AND REGULATORY REQUIREMENTS SET FORTH BELOW.
- * INSTALL A GROUND WATER COLLECTION TRENCH PARALLEL TO THE EXISTING TRENCH, DOWN TO THE TOP OF BEDROCK, WITH AN ESTIMATED INFLOW RATE OF 20 GPM. THE DEEPEMED TRENCH WOULD EXTEND THE LENGTH OF THE INTERMITTENT STREAM THAT IS POTENTIALLY FED BY OVERBURDEN GROUND WATER FLOW.
- * UPGRADE THE WASTE WATER TREATMENT FACILITY AS NECESSARY IN ORDER TO ACHIEVE PENNSYLVANIA NPDES PERMIT LIMITS FOR ORGANICS AND PENNSYLVANIA ARARS FOR METALS IN SURFACE WATERS, AS SET FORTH BELOW.
- * EITHER UPGRADE THE EQUALIZATION LAGOON TO MEET NPDES AND/OR RCRA TECHNOLOGY REQUIREMENTS, OR CONSTRUCT A NEW EQUALIZATION LAGOON AS PART OF A NEW COLLECTION AND TREATMENT SYSTEM WHICH MEET THE AFOREMENTIONED CRITERIA. THE DEGREE OF UPGRADE AND/OR WHETHER A NEW LAGOON IS REQUIRED WILL BE DETERMINED DURING RD/RA.
- * STUDY FURTHER THE PRACTICABILITY OF DEEP GROUND WATER RESTORATION.
- * UPGRADE SURFACE WATER RUNON/RUNOFF CONTROLS.
- * COLLECT AND CONSOLIDATE THE ONSITE SCATTERED FLUFF WITH THE REMAINDER OF THE FLUFF PILE.

- * UPGRADE THE EXISTING SITE FENCE AND CONTINUE SITE MAINTENANCE AND MONITORING.

MAJOR OBJECTIVES OF THE INCINERATOR OPERATION WOULD BE TO ASSURE COMPLIANCE WITH THE RCRA, TSCA, AND CLEAN AIR ACT PERFORMANCE STANDARDS, AS SET FORTH IN THE ARARS SECTION BELOW, PREVENT SLAGGING OF MINERALS, AND MINIMIZE VOLATILIZATION OF METALS WHILE ACHIEVING COMPLETE DESTRUCTION OF ORGANICS IN THE INCINERATOR FEED STREAM. THIS COULD BE ACCOMPLISHED BY EITHER A ROTARY KILN OR AN INFRARED PRIMARY COMBUSTION CHAMBER EACH FOLLOWED BY AN AFTERBURNER. TO MINIMIZE SLAGGING AND METALS VOLATILIZATION, THE PRIMARY CHAMBER WOULD BE OPERATED AT A MODERATE TEMPERATURE (1600-2000 DEGREES F). TO INSURE THOROUGH DESTRUCTION OF ORGANICS, THE AFTERBURNER WOULD BE OPERATED ABOVE 2200 DEGREES FAHRENHEIT. MATERIAL WILL BE FED INTO THE PRIMARY CHAMBER, HEATED TO THE DESIRED TEMPERATURE, AND MAINTAINED AT THAT TEMPERATURE FOR A SUFFICIENT PERIOD OF TIME TO ENSURE THAT THE TARGET DESTRUCTION LEVELS SET FORTH AT 40 CFR S 264.343 ARE ACHIEVED. SOILS WOULD BE SCREENED TO OBTAIN A REASONABLY UNIFORM PARTICLE SIZE DISTRIBUTION. FRAGMENTS LARGER THAN 6 INCHES IN DIAMETER WOULD BE CRUSHED PRIOR TO INCINERATION.

THE SECONDARY COMBUSTION CHAMBER (AFTERBURNER) WILL PROVIDE ADDITIONAL RETENTION TIME TO INSURE THOROUGH DESTRUCTION OF ORGANICS. IT WILL BE OPERATED AT CONDITIONS DESIGNED TO COMPLETELY OXIDIZE ALL ORGANICS, INCLUDING PCBS, DIOXINS, AND PRODUCTS OF INCOMPLETE COMBUSTION (PICS), LEAVING THE PRIMARY COMBUSTION CHAMBER.

THE SECONDARY COMBUSTION CHAMBER WILL BE FOLLOWED BY ONE OR MORE AIR POLLUTION CONTROL DEVICES THAT WILL REMOVE FLY ASH, ACID GASES, AND METALS FROM THE EXHAUST GAS. THE EXACT COMPONENTS OF THE AIR POLLUTION CONTROL SYSTEM WILL NOT BE KNOWN UNTIL PILOT TEST RESULTS ARE OBTAINED USING ACTUAL WASTES FROM THE SITE. IT IS LIKELY THAT THE SYSTEM WILL INCLUDE A HIGH ENERGY ALKALINE SCRUBBER FOR ACID GAS AND SOME PARTICULATE CONTROL (A STANDARD COMPONENT ON MOST MOBILE INCINERATORS) FOLLOWED BY A HIGH EFFICIENCY PARTICULATE CONTROL DEVICE SUCH AS A BAG FILTER OR ELECTROSTATIC PRECIPITATOR TO CONTROL FINE PARTICULATES (I.E. METALS). IT IS ANTICIPATED THAT A FINE PARTICULATE CONTROL DEVICE WOULD HAVE TO BE RETROFITTED TO AN EXISTING INCINERATOR UNIT. IT IS IMPORTANT TO NOTE THAT THE DISCUSSION ABOVE REGARDING INCINERATOR TYPES, DESIGN, AND OPERATING PARAMETERS IS ONLY AN ESTIMATE; FINAL DESIGN AND OPTIMUM OPERATING CONDITIONS FOR THE INCINERATOR AND EMISSIONS CONTROL DEVICES WILL BE DETERMINED BY EPA DURING RD/RA.

COMPLIANCE WITH THE RELEVANT PERFORMANCE STANDARDS WILL BE VERIFIED BY CONDUCTING A TRIAL BURN. THE TRIAL BURN WILL INCLUDE TESTS TO DETERMINE THE ACTUAL ORGANIC DESTRUCTION EFFICIENCY AND THE METALS, PARTICULATE, AND HCL EMISSION RATES. KEY INCINERATOR AND AIR POLLUTION CONTROL DEVICE OPERATING PARAMETERS WILL ALSO BE RECORDED. THESE CONDITIONS WILL FORM THE OPERATING "ENVELOPE" FOR THE REMAINDER OF THE INCINERATOR'S OPERATION. THE TRIAL BURN WILL BEGIN NO MORE THAN FIFTEEN DAYS AFTER COMMENCING INCINERATOR OPERATION.

ANALYSIS OF INCINERATOR WASTES WOULD BE REQUIRED PRIOR TO DISPOSAL OR CONSOLIDATION. BECAUSE THE FLUFF CONTAINS LEAD, WHICH IS NOT DESTROYED THROUGH INCINERATION, THE ASH AND OTHER INCINERATOR RESIDUALS WOULD LIKELY REQUIRE TREATMENT. LAND DISPOSAL RESTRICTIONS (LDRS) REQUIRE TREATMENT FOR LEAD TO A LEACHABILITY OF LESS THAN 5 MG/L, BY THE EXTRACTION PROCEDURE (EP) TOXICITY TEST. SINCE THE WASTES ARE "CHARACTERISTIC" WASTES, THE WASTES WOULD NOT HAVE TO BE DELISTED. FOLLOWING TREATMENT (STABILIZATION IN THIS CASE) WHICH ELIMINATES THE CHARACTERISTIC BY WHICH IT WAS CLASSIFIED AS HAZARDOUS (LEAD), THE RESIDUALS WOULD BE RECLASSIFIED AS NON-HAZARDOUS.

STABILIZATION WOULD REQUIRE TREATMENT WITH A CEMENTITIOUS OR POZZOLANIC REAGENT MIXTURE DEVELOPED SPECIFICALLY TO BIND THE METAL CONSTITUENTS WITHIN THE STABILIZER AND RESIDUAL MATRIX. STABILIZATION/SOLIDIFICATION CONTRACTORS HAVE DEVELOPED PROPRIETARY ADDITIVES TO SERVE AS CHELATES OR

CHEMICAL PRECIPITANTS. THESE ADDITIVES WOULD ASSIST IN CHEMICALLY BINDING CONSTITUENTS IN THE FINAL MATRIX. TREATABILITY TESTING OF THE RESIDUALS WOULD BE PERFORMED TO DETERMINE THE STABILIZING MIXTURE NEEDED TO PASS THE TOXICITY TESTING FOR LESS THAN 5 MG/L OF LEAD. IT IS ESTIMATED THAT STABILIZATION WOULD INCREASE THE RESIDUAL AMOUNT BY 15-20 PERCENT SO THAT THE VOLUME OF HOTSPOT RESIDUALS WOULD TOTAL APPROXIMATELY 1,610 CUBIC YARDS. THE QUANTITY OF HOTSPOT WASTES AFTER STABILIZATION WOULD BE REDUCED TO ABOUT 33 PERCENT OF THE ORIGINAL AMOUNT. AFTER EITHER PASSING THE TOXICITY TESTING WITHOUT TREATMENT OR BEING TREATED TO A POINT AT WHICH THEY PASS THE TEST, THE RESIDUALS WOULD BE DISPOSED EITHER IN AN OFFSITE MUNICIPAL LANDFILL OR CONSOLIDATED WITH THE REMAINDER OF THE FLUFF PILE ONSITE.

THE METALS CONTAMINATED SOILS AND SEDIMENTS WOULD HAVE TO UNDERGO TOXICITY TESTING IF THEY WILL BE DISPOSED OFFSITE. AFTER EITHER PASSING THE TEST WITHOUT TREATMENT, OR BEING STABILIZED TO A POINT AT WHICH THEY PASS THE TEST, THE SOILS AND/OR SEDIMENTS WOULD BE DISPOSED IN AN OFFSITE MUNICIPAL LANDFILL.

THE MISCELLANEOUS DEBRIS WOULD UNDERGO TOXICITY TESTING AND, IF IT PASSES THE TEST, THEN IT WILL BE DISPOSED IN AN OFFSITE MUNICIPAL LANDFILL. IF THE DEBRIS FAILS THE TEST, THEN IT WILL BE DISPOSED IN A RCRA LANDFILL UNIT WHICH MEETS MINIMUM TECHNOLOGY REQUIREMENTS (MTRS). THE SMALL FLUFF PILE LOCATED OFFSITE TO THE SOUTH, IDENTIFIED AS W1-16 ON FIGURE 10, IS CONSIDERED MISCELLANEOUS DEBRIS. OFFSITE DEBRIS DISPOSAL WOULD NEED TO BE ACCOMPLISHED PRIOR TO MAY 8, 1992 IN ORDER TO MEET THE REQUIREMENTS OF THE NATIONAL CAPACITY VARIANCE.

IF AN ONSITE CONTAINMENT REMEDY IS SELECTED FOR OU3 - THE REMAINDER OF THE FLUFF PILE - THEN TREATED/UNTREATED (DEPENDING ON THE RESULTS OF TOXICITY TESTING) INCINERATOR RESIDUALS, AND UNTREATED SEDIMENTS AND SOILS WOULD BE CONSOLIDATED ONSITE WITH THE REMAINDER OF THE FLUFF PILE RATHER THAN BEING DISPOSED OFFSITE. IN THIS CASE, IT WOULD BE UNNECESSARY TO PERFORM TOXICITY TESTING ON THE SOILS AND SEDIMENTS. WITH REGARD TO TARGET LEVELS FOR THE DIOXIN, PCB, AND LEAD CONTAMINATED MEDIA, THE FEDERAL STANDARDS OF 20 UG/KG, 25 MG/KG, AND 1,000 MG/KG, RESPECTIVELY, WILL BE USED OR A LEVEL AS DETERMINED BY A RECOGNIZED FATE AND TRANSPORT MODEL, WHICHEVER IS LOWER. A MODEL WILL BE RUN TO DETERMINE SOIL CONTAMINANT LEVELS WHICH WILL PRODUCE GROUND WATER CONCENTRATIONS AT BACKGROUND LEVELS, PURSUANT TO THE PENNSYLVANIA ARAR FOR GROUND WATER, 25 PA CODE CHAPTER 264, AS MORE SPECIFICALLY DELINEATED IN THE ARAR SECTION BELOW. THIS DETERMINATION WILL BE MADE DURING THE REMEDIAL DESIGN, AND IN THE EVENT THAT EPA AND PADER DO NOT AGREE ON A RECOGNIZED MODEL, THEN THE SUMMERS MODEL WILL BE USED.

IF THE MODEL PROJECTS CONTAMINANT CONCENTRATIONS FOR DIOXIN, PCBS, AND LEAD WHICH ARE LESS THAN THE FEDERAL STANDARDS, THEN THE TARGET LEVEL WILL BE THESE LOWER CONCENTRATIONS. WITH REGARD TO THE PHTHALATES, COPPER, ZINC, AND CADMIUM CONTAMINANTS, THE SOIL TARGET LEVEL WILL BE IDENTICAL TO THE CONCENTRATION VALUE PROJECTED BY THE MODEL, AS NO FEDERAL ARAR VALUES HAVE BEEN IDENTIFIED FOR THESE CONTAMINANTS IN SOIL.

EXCAVATION AND REMOVAL WILL BE ACCOMPLISHED WITH CONVENTIONAL HEAVY CONSTRUCTION EQUIPMENT, SUCH AS BACKHOES, BULLDOZERS, LOADERS, AND CRANES. STREAM SEDIMENTS WOULD BE REMOVED BY HAND EXCAVATION OR BY USING HYDRAULIC VACUUMS. ALTHOUGH THE SMALL ONSITE EMERGENT WETLAND IS NOT IN THE DIRECT PATH OF PROPOSED EXCAVATION ACTIVITIES, CARE WOULD NEED TO BE TAKEN WHEN CONDUCTING ANY CONSTRUCTION/EXCAVATION ACTIVITIES NEAR THIS AREA. CARE WOULD ALSO NEED TO BE EXERCISED WHEN EXCAVATING SEDIMENTS FROM THE INTERMITTENT STREAM SO AS TO NOT UNNECESSARILY DISTURB SURROUNDING WETLANDS AREAS.

THE INTERIM GROUND WATER REMEDY UNDER THIS ALTERNATIVE INCLUDES ENHANCED SHALLOW GROUND WATER COLLECTION AND TREATMENT BY INSTALLING AN INTERCEPTOR TRENCH SYSTEM IN THE OVERBURDEN TO THE TOP OF BEDROCK WHICH WILL EXTEND FROM THE ORIGIN OF GROUND WATER FLOW IN THE PERENNIAL SECTION OF THE INTERMITTENT STREAM PARALLEL TO THE EXISTING TRENCH, BOTH

SOUTH AND WEST OF THE FLUFF PILE. THIS TRENCH SYSTEM WILL COLLECT APPROXIMATELY 10 GPM OF LATERAL FLOW FROM THE LOCAL SYSTEM AND PERCHED FLOW WHICH IS ESTIMATED TO AVERAGE ABOUT 5-10 GPM. THUS, THE OVERBURDEN TOTAL IS ESTIMATED TO BE APPROXIMATELY 15-20 GPM. THE INTERIM REMEDY MAY BE INCORPORATED INTO THE DESIGN OF THE SITE REMEDY SPECIFIED IN THE FINAL ACTION ROD.

THE WASTE WATER TREATMENT FACILITY (WWTF) WILL BE UPGRADED AS NECESSARY IN ORDER TO ACHIEVE PENNSYLVANIA NPDES PERMIT LIMITS FOR ORGANICS AND PENNSYLVANIA ARARS FOR METALS IN SURFACE WATERS AS DELINEATED BELOW. THE WWTF WILL TREAT COLLECTED LEACHATE, GROUND WATER, AND SCRUBBER WASTE WATER. REQUIRED UPGRADES MAY INCLUDE, BUT WOULD NOT BE LIMITED TO, A FILTRATION SYSTEM FOR METALS REMOVAL AND ADDITIONAL PUMPING FACILITIES AND PIPING TO ENSURE THAT ALL RUNOFF IS BEING DELIVERED TO THE WASTE WATER TREATMENT FACILITY. THE DESIGNS AND SPECIFICATIONS FOR THE UPGRADE INCLUDING THE TYPE AND EXTENT OF ADDITIONAL ACCESSORY PUMPS AND PIPING APPARATUS WILL OCCUR DURING RD/RA AND BE REFINED VIA PILOT SCALE TESTING ONSITE.

THE EQUALIZATION LAGOON WILL BE UPGRADED EITHER TO MEET NPDES AND/OR RCRA REQUIREMENTS, OR A NEW LAGOON WILL BE CONSTRUCTED AS PART OF A NEW COLLECTION AND TREATMENT SYSTEM. RCRA MTRS WOULD REQUIRE, AT A MINIMUM, A DOUBLE LINER AND LEAK DETECTION SYSTEM. THE DEGREE OF UPGRADE AND/OR WHETHER A NEW LAGOON IS REQUIRED WILL BE DETERMINED BY EPA DURING RD/RA.

ADDITIONAL STUDIES ON THE GROUND WATER AQUIFER WILL BE CONDUCTED TO BETTER ASSESS THE PRACTICABILITY OF DEEP GROUND WATER RESTORATION. IMPLEMENTATION OF AN EFFECTIVE RECOVERY WELL SYSTEM IN THE BEDROCK IS EXPECTED TO BE DIFFICULT, DUE TO THE FRACTURED NATURE OF THE AQUIFER AT THE SITE WHICH RESULTS IN ANISOTROPIC FLOW CONDITIONS. FURTHER INFORMATION MAY BE COLLECTED ON THE EXTENT OF CONTAMINATION, TECHNICAL AND COST EFFECTIVENESS ESTIMATES FOR A DEEP GROUND WATER REMEDIATION SCHEME, AND THE POTENTIAL EFFECTS OF REMEDIATION ON DOWNGRAIENT WETLANDS. DATA GENERATED DURING THE INTERIM ACTION WILL BE USED TO DETERMINE WHEN AND WHERE THE RESTORATION OF GROUND WATER IS FEASIBLE. THE INTERIM REMEDY MAY BE INCORPORATED INTO THE DESIGN OF THE SITE REMEDY SPECIFIED IN THE FINAL ACTION ROD.

OTHER ACTIVITIES ASSOCIATED WITH THIS REMEDY INCLUDE UPGRADING SURFACE WATER RUNON/RUNOFF CONTROLS, CONSOLIDATING ONSITE SCATTERED FLUFF WITH THE MAIN FLUFF PILE, UPGRADING THE EXISTING SITE FENCE, AND CONTINUING SITE MAINTENANCE AND MONITORING. UPGRADING THE SURFACE WATER RUNON/RUNOFF CONTROLS MAY INCLUDE DEEPENING DIVERSION DITCHES, FORTIFYING BERMS, AND PROVIDING ADDITIONAL PUMPING FACILITIES AND PIPING AS DESCRIBED WITH REGARD TO THE WASTE WATER TREATMENT FACILITY ABOVE TO INSURE THAT ALL RUNOFF IS DELIVERED TO THE WASTE WATER TREATMENT FACILITY.

SOME CHANGES MAY BE MADE TO THE REMEDY AS A RESULT OF THE REMEDIAL DESIGN AND CONSTRUCTION PROCESS. SUCH CHANGES, IN GENERAL, REFLECT MODIFICATIONS RESULTING FROM THE ENGINEERING DESIGN PROCESS.

ARARS

MAJOR ARARS FOR THE SELECTED REMEDY ARE SHOWN BELOW. BECAUSE THE REMEDY PROPOSED FOR OU2, GROUND WATER, IS INTERIM IN NATURE, EPA NEED NOT ADDRESS ALL OF THE ARARS FOR OU2 AT THIS TIME; THE ADDITIONAL ARARS WILL BE DELINEATED WHEN EPA PREPARES THE FINAL ACTION ROD, PER 40 CFR S 300.430(F)(1)(II) (C) (1).

CHEMICAL-SPECIFIC ARARS

- (A) RCRA SUBTITLE C, 40 CFR PART 261 AND PA CODE, CHAPTER 261 FOR IDENTIFICATION OF CHARACTERISTIC HAZARDOUS WASTES;
- (B) THE NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS) SET FORTH AT 40 CFR PART 50;

- (C) THE PENNSYLVANIA AIR POLLUTION CONTROL ACT, TITLE 25, PA CODE CHAPTER 127;
- (D) THE PENNSYLVANIA AFAR FOR GROUND WATER FOR HAZARDOUS SUBSTANCES, WHICH IS THAT ALL GROUND WATER MUST BE REMEDIATED TO BACKGROUND QUALITY AS SPECIFIED BY 25 PA CODE SECTIONS 264.90 - 264.100, AND IN PARTICULAR, BY 25 PA CODE SECTIONS 264.97(I), (J), AND 264.100(A)(9).
- (E) 40 CFR PART 761.125, WHICH REQUIRES REMOVAL OF CONTAMINATED SOILS TO 25 MG/KG IN AREAS OF RESTRICTED PUBLIC USE UNDER THE TOXIC SUBSTANCES AND CONTROL ACT (TSCA). IF FATE AND TRANSPORT MODELING SHOWS THAT A LOWER VALUE IS MORE APPROPRIATE, THAT VALUE WILL BE USED.
- (F) THE PENNSYLVANIA AMBIENT WATER QUALITY CRITERIA (AWQC) VALUES (PA CODE 25, CHAPTER 93) FOR COPPER (4.0 UG/L), LEAD (0.6 UG/L), ZINC (36 UG/L), AND SECONDARY DRINKING WATER STANDARDS UNDER THE PENNSYLVANIA SAFE DRINKING WATER ACT (PA CODE, TITLE 25, CHAPTER 109) FOR IRON (300 UG/L) AND MANGANESE (50 UG/L) IN SURFACE WATER. EPA WILL ALSO REQUIRE COMPLIANCE WITH THE TERMS OF THE NPDES PERMIT FOR THE WASTE WATER TREATMENT FACILITY.

ACTION-SPECIFIC ARARS

- (G) IF WASTE IS TO BE CONVEYED OFFSITE TO A LANDFILL, THEN RCRA AND DEPARTMENT OF TRANSPORTATION REGULATIONS GOVERNING THE TRANSPORTATION OF HAZARDOUS WASTES, 40 CFR PARTS 262 AND 263, AND 40 CFR PARTS 107 AND 171-179, RESPECTIVELY;
- (H) LDRS FOR DISPOSAL OF INCINERATOR RESIDUALS AND FOR DISPOSAL OF SEDIMENTS, SOILS, AND DEBRIS IF THESE ARE DISPOSED OFFSITE, AS PROVIDED IN 40 CFR PART 268;
- (I) PA CODE, TITLE 25, CHAPTER 264, SUBCHAPTER O - PENNSYLVANIA REGULATIONS FOR HAZARDOUS WASTE INCINERATION, EXPECT TO THE EXTENT FEDERAL REGULATIONS PROVIDE MORE STRINGENT STANDARDS;
- (J) THE EPA TSCA REGULATIONS FOR INCINERATION OF PCB MATERIALS, 40 CFR S 761.70;
- (K) RCRA INCINERATION STANDARDS SET FORTH AT 40 CFR PART 264, SUBPART O;
- (L) IF THE WASTES ARE NONHAZARDOUS, THEN ONSITE LANDFILLING MUST COMPLY WITH RCRA LANDFILL STANDARDS, 40 CFR PART 264, SUBPART N;
- (M) IF THE WASTES ARE FIXATED USING A CEMENT OR POZZOLAN-BASED PROCESS, OR ANOTHER SIMILAR FIXATION PROCESS THAT PROVIDES EQUIVALENT PROTECTION, EPA WILL REQUIRE COMPLIANCE WITH RCRA STANDARDS FOR MISCELLANEOUS TREATMENT UNITS, 40 CFR PART 264, SUBPART X, AND THE OPERATION, MOBILIZATION AND CLOSURE REQUIREMENTS SET FORTH AT 40 CFR SS 264.600, ET SEQ.
- (N) OSHA STANDARDS FOR WORKER'S PROTECTION, 29 CFR PARTS 1904, 1910, AND 1926;
- (O) RCRA LANDFILL STANDARDS, 40 CFR PART 264, SUBPART N, AND PA CODE TITLE 25, CHAPTERS 271, 273, 275, 277, 279, 281, 283, AND 285, WHICH REGULATE SOLID WASTE LANDFILLS, SHOULD EPA SELECT OFFSITE DISPOSAL OF NONHAZARDOUS MATERIALS;

- (P) RCRA REQUIREMENTS FOR FIXATION OF ASH RESIDUES, IF NECESSARY, 40 CFR PART 264, SUBPART X;
- (Q) PADER HAZARDOUS WASTE REGULATIONS (PA CODE, TITLE 25, CHAPTERS 260-270) FOR THE EQUALIZATION LAGOON UPGRADES/NEW LAGOON.

LOCATION-SPECIFIC ARARS

- (R) PA CODE, TITLE 25, CHAPTER 102, WHICH PERTAINS TO EROSION CONTROL REQUIREMENTS RELATED TO EXCAVATION ACTIVITIES.
- (S) THE NATIONAL CAPACITY VARIANCE FOR OFFSITE DEBRIS DISPOSAL, IF IT IS DETERMINED TO BE HAZARDOUS, 40 CFR PART 268, APPENDIX VIII (THERE IS A RCRA LAND DISPOSAL RESTRICTION CAPACITY EXTENSION UNTIL MAY 8, 1992, PER 55 FED. R. 22520);
- (T) THE CLEAN WATER ACT, 33 USC SS 1251 ET SEQ., WHICH REGULATES ACTIVITY IN THE VICINITY OF WETLANDS;

TO BE CONSIDERED

- (A) THE EPA GUIDANCE ON METALS AND HYDROGEN CHLORIDE CONTROLS FOR HAZARDOUS WASTE INCINERATORS (EPA OFFICE OF SOLID WASTE, AUGUST 1989);
- (B) LEAD IN LIMITED AREAS OF SITE SOILS IN EXCESS OF 1,000 MG/KG (OSWER DIRECTIVE #9355.4-02). IF FATE AND TRANSPORT MODELING SHOWS THAT A LOWER VALUE IS MORE APPROPRIATE, THAT VALUE WILL BE USED.
- (C) DIOXIN IN PLASTIC FLUFF AND SOIL EXCEEDING 20 UG/KG. PREVIOUS DIOXIN REMEDIATION BY THE EPA AT TIMES BEACH, MISSOURI HAS REQUIRED CLEANUP TO THE 20 UG/KG LEVEL IN NON-RESIDENTIAL AREAS AT WHICH FUTURE USE IS TO BE AS A GREEN AREA, SUCH AS A PARK OR OPEN SPACE. ALTHOUGH CLEANUP LEVELS HAVE VARIED AT DIFFERENT SITES, THE 20 UG/KG LEVEL HAS ALSO BEEN USED IN SOME INDUSTRIALIZED AREAS AS WELL. IN THE TIME SINCE THOSE LEVELS WERE APPLIED, EPA HAS CHANGED ITS METHODS OF CALCULATING 2,3,7,8-TCDD EQUIVALENCE FOR THE DIOXIN AND DIBENZOFURAN COMPOUNDS. AT THE EDM SITE, THE NEW EQUIVALENCE VALUE IS TWICE THAT CALCULATED USING THE OLD METHOD. THEREFORE, THE NUMBER 20 UG/KG AT THE EDM SITE WILL PROVIDE PROTECTION EQUIVALENT TO 10 UG/KG, AS APPLIED AT SOME OTHER SITES BEFORE THE CALCULATION METHOD WAS CHANGED. IF FATE AND TRANSPORT MODELING SHOWS THAT A LOWER VALUE IS MORE APPROPRIATE, THAT VALUE WILL BE USED.
- (D) EXECUTIVE ORDER 11988, 40 CFR S 6, APPENDIX A, CONCERNING FEDERAL WETLANDS POLICIES;

#SD

XI. STATUTORY DETERMINATIONS

SECTION 121 OF CERCLA REQUIRES THAT THE SELECTED REMEDY:

- * BE PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT;
- * COMPLY WITH ARARS;
- * BE COST-EFFECTIVE;
- * UTILIZE PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES OR RESOURCE RECOVERY TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE; AND

* ADDRESS WHETHER THE PREFERENCE FOR TREATMENT AS A
PRINCIPAL ELEMENT IS SATISFIED.

A DESCRIPTION OF HOW THE SELECTED REMEDIES SATISFY EACH OF THE ABOVE
STATUTORY REQUIREMENTS IS PROVIDED BELOW.

PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT.

THE SELECTED REMEDY FOR OU1 WILL BE PROTECTIVE OF HUMAN HEALTH AND THE
ENVIRONMENT BY REDUCING THE PRINCIPAL THREATS POSED BY THE CURRENT SITE
SITUATION. BASED ON THE RISK ASSESSMENT, THE THREATS POSED BY THE SITE
ARE THE AREAS OF THE FLUFF PILE CONTAMINATED WITH DIOXIN, AND FLUFF AND
SOIL AREAS CONTAMINATED WITH HIGH LEVELS OF PCBS, LEAD CONTAMINATED
SOILS, COPPER, LEAD, AND ZINC CONTAMINATED SEDIMENTS AND SURFACE WATER
IN THE INTERMITTENT STREAM, AND TCE AND METALS CONTAMINATED LEACHATE
FROM THE INTERMITTENT STREAM BANK SEEPS.

THE INCINERATION, STABILIZATION, DISPOSAL, AND UPGRADE ACTIONS OF THE
SELECTED REMEDY WOULD PROVIDE PROTECTION OF HUMAN HEALTH AND THE
ENVIRONMENT BY ELIMINATING, REDUCING, AND CONTROLLING RISK THROUGH
TREATMENT AND ENGINEERING CONTROLS. EXPOSURE TO THE PRINCIPAL THREATS
AT THE SITE AND ALL OTHER CONTAMINATED SOLID MEDIA WOULD BE ELIMINATED.
INCINERATION WOULD COMPLETELY DESTROY ALL ORGANICS. RESIDUALS AND
SOILS/SEDIMENTS WITH METALS EXCEEDING TARGET LEVELS WOULD BE STABILIZED,
IF NECESSARY, AND DISPOSED TO MINIMIZE THE POTENTIAL FOR FUTURE
MIGRATION. REMOVAL OF SEDIMENT FROM THE INTERMITTENT STREAM WOULD
REMOVE THE HAZARD POSED BY METAL CONCENTRATIONS TO AQUATIC LIFE.
DISPOSAL OF TREATED AND UNTREATED MATERIALS WILL PREVENT CONTACT AND
FURTHER REDUCE MOBILITY. UPGRADE SURFACE WATER RUNON/RUNOFF CONTROLS
WOULD DECREASE CONTAMINANT MIGRATION VIA FLUFF AND CONTAMINANT TRANSPORT
TO THE GROUND WATER AND SURFACE WATER.

EXPOSURE LEVELS WILL BE REDUCED TO WITHIN OR BELOW THE 1E-04 TO 1E-06
ACCEPTABLE RISK RANGE AND THE HAZARD INDICES FOR NON-CARCINOGENS WILL BE
REDUCED TO LESS THAN ONE. IMPLEMENTATION OF THE SELECTED REMEDY WILL
NOT POSE UNACCEPTABLE SHORT-TERM RISKS OR CROSS-MEDIA IMPACTS TO THE
SITE, THE WORKERS, OR THE COMMUNITY. WHILE THERE ARE RISKS ASSOCIATED
WITH LEAD VOLATILIZATION DURING INCINERATION, THESE RISKS WOULD BE
REDUCED TO ACCEPTABLE LEVELS THROUGH THE USE OF SPECIALIZED AIR
POLLUTION CONTROL EQUIPMENT. SINCE METALS ARE NOT DESTROYED THROUGH
INCINERATION, THERE WILL BE SOME LONG-TERM RISKS ASSOCIATED WITH THE
METALS (PREDOMINATELY LEAD) CONTAMINATION, HOWEVER, THE INORGANIC
CONTAMINATED RESIDUALS WILL BE TREATED PRIOR TO DISPOSAL IF THEY FAIL
TOXICITY TESTING TO REDUCE THE MOBILITY OF THE METALS. SOILS AND
SEDIMENTS WILL BE TREATED IF NECESSARY. TREATED AND UNTREATED MATERIALS
WILL BE PLACED INTO EITHER AN OFFSITE LANDFILL OR CONSOLIDATED ONSITE
WITH THE REMAINDER OF THE FLUFF PILE IF AN ONSITE CONTAINMENT REMEDY IS
SELECTED FOR THAT OU (OU3) FOR PROPER LONG-TERM MANAGEMENT.
MISCELLANEOUS DEBRIS WILL BE DISPOSED OFFSITE.

THE SELECTED REMEDY FOR OU2 REDUCES RISK BY INITIATING FURTHER SHALLOW
GROUND WATER CLEANUP AND REDUCING THE POTENTIAL FOR DEGRADATION WHILE
ADDITIONAL GROUND WATER ANALYSIS IS BEING CONDUCTED. SINCE OU2 IS AN
INTERIM REMEDY, FURTHER DISCUSSION OF COMPLIANCE WITH THE STATUTORY
REQUIREMENT OF OVERALL PROTECTION WILL BE ADDRESSED AT THE TIME OF THE
FINAL REMEDY SELECTION.

COMPLIANCE WITH ARARS.

ALL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS)
PERTAINING TO THE SELECTED REMEDY WILL BE ATTAINED. BECAUSE THE REMEDY
PROPOSED FOR OU2, GROUND WATER, IS INTERIM IN NATURE, EPA NEED NOT
ADDRESS ALL OF THE ARARS FOR OU2 AT THIS TIME; THE ADDITIONAL ARARS WILL
BE DELINEATED WHEN EPA PREPARES THE FINAL ACTION ROD, PER 40 CFR S
300.430(F)(1)(II)(C)(1).

CHEMICAL-SPECIFIC ARARS

- (A) RCRA SUBTITLE C, 40 CFR PART 261 AND PA CODE, CHAPTER 261 FOR IDENTIFICATION OF CHARACTERISTIC HAZARDOUS WASTES;
- (B) THE NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS) SET FORTH AT 40 CFR PART 50;
- (C) THE PENNSYLVANIA AIR POLLUTION CONTROL ACT, TITLE 25, PA CODE CHAPTER 127;
- (D) THE PENNSYLVANIA AFAR FOR GROUND WATER FOR HAZARDOUS SUBSTANCES, WHICH IS THAT ALL GROUND WATER MUST BE REMEDIATED TO BACKGROUND QUALITY AS SPECIFIED BY 25 PA CODE SECTIONS 264.90 - 264.100, AND IN PARTICULAR, BY 25 PA CODE SECTIONS 264.97(I), (J), AND 264.100(A)(9);
- (E) 40 CFR PART 761.125, WHICH REQUIRES REMOVAL OF CONTAMINATED SOILS TO 25 MG/KG IN AREAS OF RESTRICTED PUBLIC USE UNDER THE TOXIC SUBSTANCES AND CONTROL ACT (TSCA). IF FATE AND TRANSPORT MODELING SHOWS THAT A LOWER VALUE IS MORE APPROPRIATE, THAT VALUE WILL BE USED;
- (F) THE PENNSYLVANIA AMBIENT WATER QUALITY CRITERIA (AWQC) VALUES (PA CODE 25, CHAPTER 93) FOR COPPER (4.0 UG/L), LEAD (0.6 UG/L), ZINC (36 UG/L), AND SECONDARY DRINKING WATER STANDARDS UNDER THE PENNSYLVANIA SAFE DRINKING WATER ACT (PA CODE, TITLE 25, CHAPTER 109) FOR IRON (300 UG/L) AND MANGANESE (50 UG/L) IN SURFACE WATER. EPA WILL ALSO REQUIRE COMPLIANCE WITH THE TERMS OF THE NPDES PERMIT FOR THE WASTE WATER TREATMENT FACILITY;

ACTION-SPECIFIC ARARS

- (G) IF WASTE IS TO BE CONVEYED OFFSITE TO A LANDFILL, THEN RCRA AND DEPARTMENT OF TRANSPORTATION REGULATIONS GOVERNING THE TRANSPORTATION OF HAZARDOUS WASTES, 40 CFR PARTS 262 AND 263, AND 40 CFR PARTS 107 AND 171-179, RESPECTIVELY;
- (H) LDRS FOR DISPOSAL OF INCINERATOR RESIDUALS AND FOR DISPOSAL OF SEDIMENTS, SOILS, AND DEBRIS IF THESE ARE DISPOSED OFFSITE, AS PROVIDED IN 40 CFR PART 268;
- (I) PA CODE, TITLE 25, CHAPTER 264, SUBCHAPTER O - PENNSYLVANIA REGULATIONS FOR HAZARDOUS WASTE INCINERATION, EXCEPT TO THE EXTENT FEDERAL REGULATIONS PROVIDE MORE STRINGENT STANDARDS;
- (J) THE EPA TSCA REGULATIONS FOR INCINERATION OF PCB MATERIALS, 40 CFR S 761.70;
- (K) RCRA INCINERATION STANDARDS SET FORTH AT 40 CFR PART 264, SUBPART O;
- (L) IF THE WASTES ARE NONHAZARDOUS, THEN ONSITE LANDFILLING MUST COMPLY WITH RCRA LANDFILL STANDARDS, 40 CFR PART 264, SUBPART N;
- (M) IF THE WASTES ARE FIXATED USING A CEMENT OR POZZOLAN-BASED PROCESS, OR ANOTHER SIMILAR FIXATION PROCESS THAT PROVIDES EQUIVALENT PROTECTION, EPA WILL REQUIRE COMPLIANCE WITH RCRA STANDARDS FOR MISCELLANEOUS TREATMENT UNITS, 40 CFR PART 264, SUBPART X, AND THE OPERATION, MOBILIZATION AND CLOSURE REQUIREMENTS SET FORTH AT 40 CFR SS 264.600, ET SEQ.;
- (N) OSHA STANDARDS FOR WORKER'S PROTECTION, 29 CFR PARTS 1904, 1910, AND 1926;
- (O) RCRA LANDFILL STANDARDS, 40 CFR PART 264, SUBPART N, AND PA CODE TITLE 25, CHAPTERS 271, 273, 275, 277, 279, 281, 283, AND 285, WHICH REGULATE SOLID WASTE LANDFILLS, SHOULD EPA SELECT

OFFSITE DISPOSAL OF NONHAZARDOUS MATERIALS;

- (P) RCRA REQUIREMENTS FOR FIXATION OF ASH RESIDUES, IF NECESSARY, 40 CFR PART 264, SUBPART X;
- (Q) PADER HAZARDOUS WASTE REGULATIONS (PA CODE, TITLE 25, CHAPTERS 260-270) FOR THE EQUALIZATION LAGOON UPGRADES/NEW LAGOON;

LOCATION-SPECIFIC ARARS

- (R) PA CODE, TITLE 25, CHAPTER 102, WHICH PERTAINS TO EROSION CONTROL REQUIREMENTS RELATED TO EXCAVATION ACTIVITIES;
- (S) THE NATIONAL CAPACITY VARIANCE FOR OFFSITE DEBRIS DISPOSAL, IF IT IS DETERMINED TO BE HAZARDOUS, 40 CFR PART 268, APPENDIX VIII (THERE IS A RCRA LAND DISPOSAL RESTRICTION CAPACITY EXTENSION UNTIL MAY 8, 1992, PER 55 FED. R. 22520);
- (T) THE CLEAN WATER ACT, 33 USC SS 1251 ET SEQ., WHICH REGULATES ACTIVITY IN THE VICINITY OF WETLANDS;

TO BE CONSIDERED

- (A) THE EPA GUIDANCE ON METALS AND HYDROGEN CHLORIDE CONTROLS FOR HAZARDOUS WASTE INCINERATORS (EPA OFFICE OF SOLID WASTE, AUGUST 1989);
- (B) LEAD IN LIMITED AREAS OF SITE SOILS IN EXCESS OF 1,000 MG/KG (OSWER DIRECTIVE #9355.4-02). IF FATE AND TRANSPORT MODELING SHOWS THAT A LOWER VALUE IS MORE APPROPRIATE, THAT VALUE WILL BE USED;
- (C) DIOXIN IN PLASTIC FLUFF AND SOIL EXCEEDING 20 UG/KG. PREVIOUS DIOXIN REMEDIATION BY THE EPA AT TIMES BEACH, MISSOURI HAS REQUIRED CLEANUP TO THE 20 UG/KG LEVEL IN NON-RESIDENTIAL AREAS AT WHICH FUTURE USE IS TO BE AS A GREEN AREA, SUCH AS A PARK OR OPEN SPACE. ALTHOUGH CLEANUP LEVELS HAVE VARIED AT DIFFERENT SITES, THE 20 UG/KG LEVEL HAS ALSO BEEN USED IN SOME INDUSTRIALIZED AREAS AS WELL. IN THE TIME SINCE THOSE LEVELS WERE APPLIED, EPA HAS CHANGED ITS METHODS OF CALCULATING 2,3,7,8-TCDD EQUIVALENCE FOR THE DIOXIN AND DIBENZOFURAN COMPOUNDS. AT THE EDM SITE, THE NEW EQUIVALENCE VALUE IS TWICE THAT CALCULATED USING THE OLD METHOD. THEREFORE, THE NUMBER 20 UG/KG AT THE EDM SITE WILL PROVIDE PROTECTION EQUIVALENT TO 10 UG/KG, AS APPLIED AT SOME OTHER SITES BEFORE THE CALCULATION METHOD WAS CHANGED. IF FATE AND TRANSPORT MODELING SHOWS THAT A LOWER VALUE IS MORE APPROPRIATE, THAT VALUE WILL BE USED;
- (D) EXECUTIVE ORDER 11988, 40 CFR S 6, APPENDIX A, CONCERNING FEDERAL WETLANDS POLICIES;

COST-EFFECTIVENESS.

THE ESTIMATED PRESENT WORTH COST FOR THE SELECTED REMEDY IS \$12,429,000. THE REMEDY IS COST-EFFECTIVE IN MITIGATING THE RISKS POSED BY THE PRINCIPAL THREATS AT THE SITE IN A REASONABLE PERIOD OF TIME AND MEETS ALL OTHER REQUIREMENTS OF CERCLA. ORGANIC CONTAMINANTS PRESENT IN OU1 MEDIA WILL BE DESTROYED AND INORGANIC CONTAMINANTS WILL BE TREATED IF NECESSARY TO REDUCE TOXICITY AND MOBILITY, AND THE TREATED AND UNTREATED NONHAZARDOUS WASTES WILL BE DISPOSED IN AN APPROPRIATE LANDFILL OR CONSOLIDATED ONSITE; THEREFORE, THE SELECTED REMEDY AFFORDS A HIGH DEGREE OF LONG-TERM EFFECTIVENESS AND PERMANENCE. ALTHOUGH ALTERNATIVES 1, 2, AND 3 CAN BE IMPLEMENTED AT LOWER COSTS, THESE ALTERNATIVES ARE NOT AS EFFECTIVE IN PROTECTING HUMAN HEALTH AND THE ENVIRONMENT.

UTILIZATION OF PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT

TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE.

THE SELECTED REMEDY FOR OU1 UTILIZES PERMANENT SOLUTIONS AND TREATMENT TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE WHILE PROVIDING THE BEST BALANCE AMONG THE OTHER EVALUATION CRITERIA. OF ALL ALTERNATIVES EVALUATED, THE SELECTED REMEDY PROVIDES THE BEST BALANCE IN TERMS OF LONG-TERM EFFECTIVENESS AND PERMANENCE, SHORT-TERM EFFECTIVENESS, COST, IMPLEMENTABILITY, AND STATE AND COMMUNITY ACCEPTANCE. SINCE OU2 IS AN INTERIM REMEDY, THE UTILIZATION OF PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE WILL BE ADDRESSED AT THE TIME OF THE FINAL REMEDY SELECTION FOR THAT OU.

THE MAJOR TRADEOFFS THAT PROVIDE THE BASIS FOR THE SELECTION DECISION ARE OVERALL PROTECTION, IMPLEMENTABILITY, AND COST. BECAUSE OF THE UNCERTAINTIES REGARDING TECHNICAL AND COST EFFECTIVENESS, IMPLEMENTABILITY, AND ADDITIONAL BENEFITS VS. COSTS DERIVED FROM ALTERNATIVE 5, THE SELECTED REMEDY (ALTERNATIVE 4) IS MORE APPROPRIATE. THIS IS PARTICULARLY SO IN LIGHT OF THE POTENTIAL HARM THAT COULD BEFALL THE NEARBY WETLANDS SHOULD EPA REQUIRE PUMPING AND TREATING OF DEEP GROUND WATER, AS AFOREMENTIONED. ALTERNATIVE 4 PROVIDES TREATMENT TO THE MAXIMUM EXTENT PRACTICABLE FOR OU1 MEDIA AND INITIATES TREATMENT FOR THE SHALLOW GROUND WATER COMPONENT OF OU2. THIS REDUCES RISK AND THE POTENTIAL FOR FURTHER DEGRADATION IN THE GROUND WATER SYSTEM, WHILE ALLOWING ADDITIONAL STUDY ON THE PRACTICABILITY OF DEEP GROUND WATER RESTORATION. ALTERNATIVES 1, 2, AND 3 DO NOT MEET ALL OF THE REMEDIAL OBJECTIVES FOR THE SITE AND, THEREFORE, DO NOT THOROUGHLY ADDRESS OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT.

PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT.

THE SELECTED REMEDY USES TREATMENT TO ADDRESS THE PRINCIPAL THREATS AT THE SITE POSED BY OU1. TREATMENT IS EMPLOYED THROUGH INCINERATION OF THE HOTSPOT AREAS OF THE FLUFF AND SOILS WHICH PRESENT THE PRINCIPAL THREATS AT THE SITE AND STABILIZING THE RESIDUALS IF THEY FAIL TOXICITY TESTING. TREATMENT IS ALSO EMPLOYED IN STABILIZING THE METALS CONTAMINATED SEDIMENTS AND SOILS WHICH FAIL TOXICITY TESTING, IF BEING DISPOSED OFFSITE.

TREATMENT IS INITIATED FOR OU2 THROUGH ADDITIONAL SHALLOW GROUND WATER COLLECTION AND TREATMENT WHICH WILL REDUCE RISK AND THE POTENTIAL FOR FURTHER DEGRADATION. FURTHER DISCUSSION ON THE PREFERENCE FOR TREATMENT FOR OU2 WILL BE PRESENTED IN THE FINAL ACTION ROD FOR OU2.

#ESC

X. EXPLANATION OF SIGNIFICANT CHANGES

THE PROPOSED PLAN IDENTIFYING EPA'S PREFERRED ALTERNATIVE FOR THE EASTERN DIVERSIFIED METALS SITE WAS RELEASED FOR COMMENT IN FEBRUARY, 1991. THE SELECTED REMEDY DESCRIBED IN THIS ROD DIFFERS FROM THE REMEDY IN THE PROPOSED PLAN WITH REGARD TO THE FOLLOWING:

- 1) THE EP TOXICITY TEST OR ANOTHER APPROPRIATE TOXICITY TEST SUCH AS THE TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP) WILL BE USED TO DETERMINE WHETHER THE INCINERATOR RESIDUALS, SEDIMENTS, SOILS (IF OFFSITE DISPOSAL IS SELECTED FOR THE SEDIMENTS AND SOILS), AND MISCELLANEOUS DEBRIS ARE CHARACTERISTIC HAZARDOUS WASTES. THE EP TOXICITY TEST MAY BE USED IN CERTAIN CIRCUMSTANCES UNDER THE RCRA EXEMPTION FOR LEAD AND ARSENIC WASTES AS STATED IN 55 FED. R. 3868, SECTION P. APPROPRIATE TESTS FOR EACH MEDIA WILL BE DETERMINED DURING RD/RA.
- 2) THE MISCELLANEOUS DEBRIS WILL NOT BE STABILIZED, EVEN IF IT FAILS TOXICITY TESTING. STABILIZING THE DEBRIS WOULD REQUIRE, IN MANY CASES, INCREASING THE RISK TO HUMAN HEALTH AND THE ENVIRONMENT BY GRINDING WHOLE WIRE AND CABLE INTO SMALL PIECES

WHICH WOULD MAKE HAZARDOUS CONSTITUENTS, INCLUDING LEAD AND PARTICULATES, MORE MOBILE AND BIOAVAILABLE, AS WELL AS POTENTIALLY INCREASING VOLUME. IF THE DEBRIS FAILS TOXICITY TESTING, IT WILL BE DISPOSED IN A LANDFILL WHICH COMPLIES WITH ALL APPLICABLE AND APPROPRIATE RCRA REQUIREMENTS, AS DELINEATED IN THE ARAR SECTIONS OF THIS ROD.

- 3) THE SEDIMENTS AND SOILS WILL NOT BE TREATED IF THEY ARE TO BE CONSOLIDATED WITH THE REMAINDER OF THE FLUFF PILE (OU3) ONSITE. CONTAMINANT CONCENTRATIONS IN SEDIMENTS AND SOILS ARE LESS THAN IN THE FLUFF MATERIAL; CONSEQUENTLY, THERE IS NO BENEFIT TO TREATING THESE MEDIA BEFORE CONSOLIDATION WITH THE REST OF THE OU3 MEDIA.

TABLE 5
EDM SITE - ENDANGERMENT ASSESSMENT
IMPORTANT FATE AND TRANSPORT PROCESSES FOR INDICATOR COMPOUNDS

INDICATOR COMPOUND	MAJOR FATE AND TRANSPORT PROCESSES*
LEAD	SORPTION BIOACCUMULATION CHEMICAL SPECIATION BIOTRANSFORMATION
MANGANESE	SORPTION COMPLEXATION OXIDATION BIOACCUMULATION
POLYCHLORINATED BIPHENYLS (PCBS)	PHOTOLYSIS HYDROLYSIS SORPTION BIOACCUMULATION BIOTRANSFORMATION (LT 4 CHLORINE PER MOLECULE) VOLATILIZATION
DIOXINS	SORPTION BIOACCUMULATION PHOTOCHEMICAL
TRANSFORMATION TRICHLOROETHENE (TCE) BIOTRANSFORMATION/DEGRADATION	VOLATILIZATION BIOACCUMULATION OXIDATION
COPPER	SORPTION BIOACCUMULATION COMPLEX FORMATION
ZINC	SORPTION BIOACCUMULATION
BIS-(2-ETHYLHEXYL) PHTHALATE (DEHP) BIODEGRADATION	SORPTION BIOACCUMULATION

TABLE 9
EDM SITE ENDANGERMENT ASSESSMENT
THEORETICAL NONCARCINOGENIC HAZARD INDICES

NONCARCINOGENIC	MOST PROBABLE NONCARCINOGENIC	MAXIMUM
	HAZARD INDEX	HAZARD INDEX
ADULTS, OFF-SITE RESIDENTS	5.14E-01	2.31E+00
CHILDREN, AGE 6-12	1.31E+00	6.55E+00
CHILDREN, AGE 2-6	2.25E=00	1.06E+01

NOTE: THE EXPOSURE PATHWAYS INCLUDED IN THESE CALCULATIONS ARE LISTED BELOW.

ALL AGES: OFF-SITE FUGITIVE DUST (PREDICTED BY AIR MODEL) FISH INGESTION (THEORETICAL BIOACCUMULATION) RESIDENTIAL USE OF HYPOTHETICAL DOWNGRAIDENT WELL WATER.

ADULTS: ADDITIONAL OFF-SITE FUGITIVE DUST EXPOSURE AS HUNTERS AND FISHERMEN.

ADULTS,
CHILDREN 6-12: OFF-SITE RECREATIONAL EXPOSURE TO RIVER WATER

CHILDREN 6-12: OFF-SITE RECREATIONAL EXPOSURE TO INTERMITTENT STREAM WATER AND SEDIMENT ON-SITE RECREATIONAL EXPOSURE TO SURFACE SOIL, FLUFF, AND LEACHATE (FENCE-DOWN SCENARIO)

IT SHOULD BE NOTED THAT SOME OF THESE PATHWAYS ARE HYPOTHETICAL AND DO NOT REPRESENT ACTUAL EXPOSURES UNDER CURRENT CONDITIONS.

TABLE 15
BREAKDOWN OF COSTS - SELECTED REMEDY

	INSTALLED COST
SITE PREPARATION	\$ 500,000
CONSOLIDATION OF SCATTERED DEBRIS	\$ 140,000
HANDLING OF MEDIA EXCEEDING TARGET LEVELS:	
* EXCAVATION AND REMOVAL	\$ 56,700
* ONSITE INCINERATION	\$ 2,630,000
* ANALYTICAL WORK - TCLP	\$ 100,000
* STABILIZATION/TRANSPORT/DISPOSAL	\$ 3,516,100
SURFACE WATER RUNON/RUNOFF CONTROLS	\$ 58,600
TOTAL :	\$ 7,001,400
ENHANCED SHALLOW GROUND WATER COLLECTION AND TREATMENT	
* HOLDING BASIN UPGRADE	\$ 97,500
* INTERCEPTOR TRENCH	\$ 160,000
* UPGRADE TO RUNOFF LAGOON	\$ 28,900
* UPGRADE TO WWTF	\$ 20,700
TOTAL	\$ 307,100
TDCC	\$ 7,308,500
INDIRECT COST	\$ 1,500,000
CONTINGENCY AT 30 PERCENT TDCC	\$ 2,192,500
TOTAL CAPITAL COST	\$11,001,000
30 YEAR PW O&M AT 5 PERCENT GW MONITORING	\$ 428,000
30 YEAR PW O&M AT 5 PERCENT GW MONITORING	\$1,000,000
TOTAL COST	\$12,429,000